

HP NetServer LH 3000/3000r Installation Guide



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Audience Assumptions

The guide is for the person who installs, administers, and troubleshoots network servers. Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels and are familiar with weight and stability precautions for rack installations.

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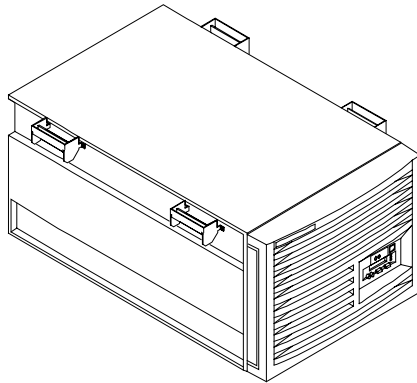
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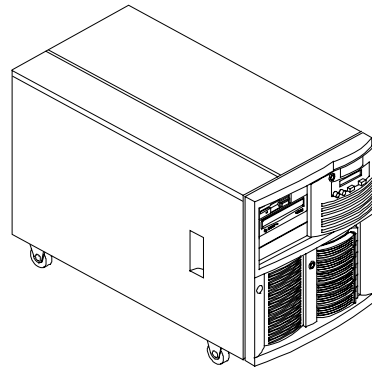
1 Setting Up the HP NetServer LH 3000r and LH 3000

Installation Guidelines

This Installation Guide is for the LH 3000r rack-mount HP NetServer and the LH 3000 pedestal HP NetServer.



**Rack-mount Orientation
LH 3000r**



**Pedestal Orientation
LH 3000**

Figure 1-1. HP NetServers

- Observe all warnings and cautions.
- Read this chapter before taking the HP NetServer out of its box. It lists what to do and in what order. Choose either:
 - ◊ HP NetServer LH 3000r rack-mount installation
 - ◊ HP NetServer LH 3000 pedestal installation

Unique to the LH 3000r are the:

- ◊ Bezel that fits HP System E and U racks
- ◊ Bezel hinge and latch

- Use the removable and reusable rack-mounting handles to move and place the LH 3000r in the rack. Remove them only when you have secured the NetServer to the rack.

The LH 3000 has a locked bezel; the LH 3000r does not.

Rack Mount Installation

Follow the setup steps in the exact order shown below for a successful rack installation. Skip any steps that do not apply to your installation.

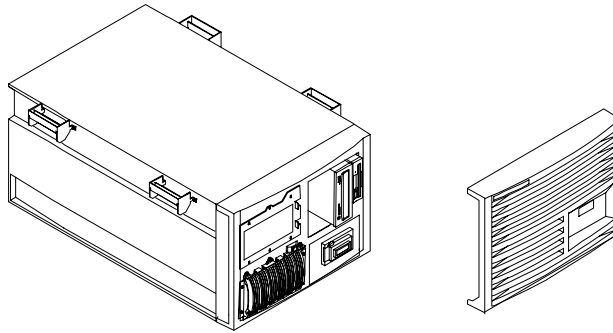


Figure 1-2. LH 3000r and Bezel

1. As you unpack the shipping box, verify contents against the Contents List included with your NetServer. If anything is missing or damaged, call your reseller.

Store the empty boxes and packing material in a safe place. This is especially important if you plan to ship the HP NetServer elsewhere for final installation.

WARNING

The HP NetServer LH 3000r and LH 3000 each weigh up to 165 pounds (75 kgs). More than one person is required to lift a server. Do not attempt to lift the HP NetServer by yourself. Failure to observe this warning could result in serious injury or damage to the HP NetServer.

2. Familiarize yourself with the HP NetServer's controls, indicators, and ports.

Refer to Chapter 2, "Controls, Ports, and Indicators."

3. If you have optional items to add to the HP NetServer (memory, accessory boards, mass storage, or processors), remove covers and the bezel. If not, skip to step 8.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

4. If you have items such as a processor and DIMMs to install, HP recommends that you remove the system board assembly from the server chassis and install them at this time.

Refer to Chapter 5, "Installing Additional Memory," and Chapter 7, "Installing Additional Processors."

5. Install PCI hot-plug and non-hot-plug accessory boards.

Refer to Chapter 6, "Installing Additional PCI Boards."

6. Install internal non-hot-swap mass storage devices such as hard drives and tape back-up devices into the front of the HP NetServer.

Refer to Chapter 4, "Installing Mass Storage Devices."

7. Reconnect internal cables as needed.

8. Install the server in the rack.

NOTE

If you removed the system board assembly, wait to replace it in the chassis until the server is in the rack. This reduces the weight of the server making it easier to mount.

Refer to Chapter 8, "Mounting the HP NetServer in the HP Rack System/E or Rack System/U" or Chapter 13, "Alternative Rack Mounting."

9. If necessary, re-install the system board assembly in the rack-mounted chassis.
10. Replace covers, but not the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."
11. Install hot-swap mass storage devices into the front of the HP NetServer.

Refer to Chapter 4, "Installing Mass Storage Devices."
12. Replace the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."
13. Install the power supplies to the rear of the HP NetServer.

14. Install the Cable Management Arm to the rear of the rack-mounted HP NetServer.
Refer to Chapter 8, "Mounting the HP NetServer in the Rack System/E or Rack System/U."
15. Hook up the monitor, keyboard, mouse, and power supplies, if any.
Refer to Chapter 9, "Connecting Monitor, Keyboard, Mouse, and Power Supplies," and to the power supply installation guide.
16. Connect external cables.
17. Power up the HP NetServer.
Refer to Chapter 2, "Controls, Ports and Indicators."
18. Go to the "Configuring the HP NetServer" section later in this chapter.

Pedestal Installation

Follow the setup steps in the exact order shown below for a successful pedestal installation. Skip any steps that do not apply to your installation.

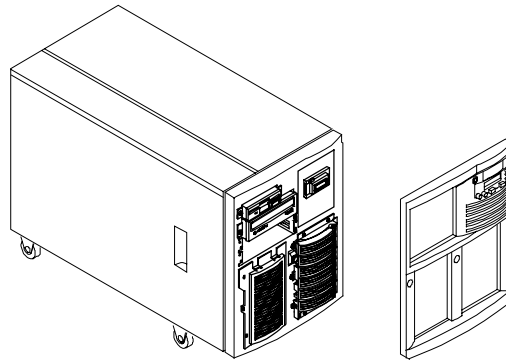


Figure 1-3. LH 3000 and Bezel

CAUTION	Unlock bezel before removing it.
----------------	----------------------------------

1. As you unpack the shipping box, verify contents against the Contents List included with your HP NetServer. If anything is missing or damaged, call your reseller.

Store the empty boxes and packing material in a safe place. This is especially important if you plan to ship the HP NetServer elsewhere for final installation.

CAUTION	The HP NetServer LH 3000r and LH 3000 each weigh up to 165 pounds (75 kgs). More than one person is required to lift a server. Do not attempt to lift the HP NetServer by yourself. Failure to observe this warning could result in serious injury or damage to the HP NetServer.
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2. Familiarize yourself with the controls, ports, and indicators.

Refer to Chapter 2, "Controls, Ports, and Indicators."

NOTE	Lock the casters to steady the system while you work on it.
-------------	---

3. If you have optional items to add to the HP NetServer (memory, accessory boards, mass storage, or processors), remove covers and the bezel. If not, skip to step 8.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

4. To install a processor and DIMMs, HP recommends that you remove the system board assembly from the server chassis and install them at this time.

Refer to Chapter 5, "Installing Additional Memory," and Chapter 7, "Installing Additional Processors."

5. Install PCI hot-plug and non-hot-plug accessory boards in the HP NetServer.

Refer to Chapter 6, "Installing Additional PCI Boards."

6. Install internal non-hot-swap mass storage devices such as hard drives and tape back-up devices into the front of the HP NetServer.

7. Install the system board assembly into the HP NetServer if you removed it.

8. Install non-hot swap disk drives, tape drives, and other mass storage devices into the front of the HP NetServer.

Refer to Chapter 4, "Installing Mass Storage Devices."

9. Reconnect all internal cables.

10. Replace covers and the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

11. Connect the monitor, keyboard, mouse and power supplies.

Refer to Chapter 9, "Connecting Monitor, Keyboard, Mouse, and Power Supplies."

12. Connect external cables.

13. Power up the HP NetServer.

Refer to Chapter 2, "Controls, Ports, and Indicators."

Go to the next section, "Configuring the HP NetServer."

Configuring the HP NetServer

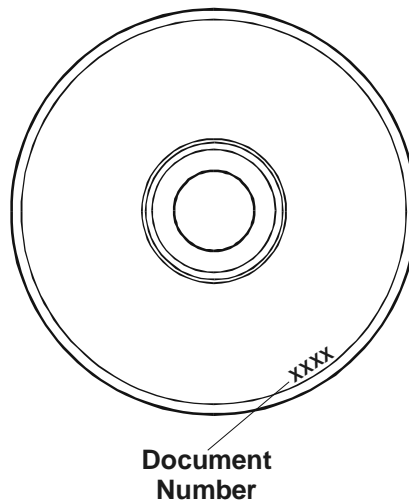


Figure 1-4. Navigator CD-ROM

1. Load the HP Navigator CD-ROM. Place the HP NetServer Navigator CD-ROM in the drive and close the drive.

NOTE

To fully configure the HP NetServer, all the rack components must be cabled and online (though not necessarily installed in the rack).

Refer to Chapter 10, "Configuring the HP NetServer."

2. On your first use of the CD, HP Navigator prompts you to set the time and date and gives you an opportunity to change the display language.

NOTE	You might also be asked to update your system BIOS. Follow the instructions to do so.
-------------	---

3. Read the Readme File: Select "Readme File" from the HP Navigator Main Menu. The Readme file contains the latest information to help you install your HP NetServer.
4. Run DiagTools: To verify the HP NetServer hardware as shipped, run DiagTools by first creating DiagTools flexible diskettes from the *HP NetServer Navigator CD-ROM*. For more information on how to use DiagTools to detect all processors and memory on the system board, refer to the online *HP NetServer DiagTools Error Reference and User Guide*.
5. Install Information Assistant: Install Information Assistant from the *HP NetServer Online Documentation CD-ROM* onto a system other than the HP NetServer you are installing.

Go to Chapter 11, "Information Assistant," for information on how to gain access to online documentation.
6. Run Configuration Assistant and Installation Assistant: Select "Configuration and Installation Assistant."
7. Configure Mass Storage: This HP NetServer ships with the hot-swap mass storage device(s) NetRAID enabled. To configure the drive(s), either:
 - ◇ Run HP NetRAID Assistant to configure one or more RAID logical drives. To run HP NetRAID Assistant, select "Execute" from the Configure Disk Array screen.
 - or
 - ◇ Restart the HP NetServer.
 - a. Press function key [F2] when prompted on the boot screen.
 - b. Press function key [F10] to save the configuration and exit the utility program.
 - c. Answer "Yes" to the question "Save Configuration and Exit Now?" The HP NetServer will reboot, and HP Navigator will restart.
8. Select the configuration mode from the next screen.

Three configuration modes are available. Refer to the Chapter 10, "Configuring the HP NetServer."

9. Choose a NOS: Select the NOS to install and the version, if necessary.
10. Select the NOS installation mode: If you select certain versions of Novell NetWare/IntranetWare or Microsoft Windows NT Server, you will be asked, "Would you like to use HP's automated mode of NOS installation?"
 - ◇ Select **Yes** to choose automated NOS installation for first-time installation of Novell NetWare/IntranetWare or Microsoft Windows NT Server on a factory-configured HP NetServer.
 - ◇ Select **No** to use the manual NOS installation if:
 - * you are installing a NOS other than Novell NetWare/IntranetWare or Microsoft Windows NT Server
 - * you have replaced accessory components
 - * you have replaced HP accessories with non-HP accessories
11. View Configuration Advisories: Read the Configuration Advisories and print them if necessary. Make any changes suggested in the advisories.
12. Configure Remote Management: If you plan to manage the HP NetServer LH 3000/3000r remotely, refer to the HP NetServer Server Management Reference Guide for instructions. Select "Configure Remote Management" on the Navigator screen to configure Integrated Remote Assistant.
13. Show System Information: Select "View System Information" to get information about accessory boards and devices. Select "View Resources" to view used and available system resources.
14. Install the NOS Automated: If you selected the HP automated NOS installation process, you will be guided through the process by a series of HP display screens:
 - ◇ Install Utility Partition: This step creates a disk utility partition on the server boot hard disk drive where HP Navigator will copy troubleshooting and other utilities.

NOTE

Select "Execute" on the Install Utility Partition screen to install the partition. The utility partition is not available under SCO UNIX.

- ◇ Execute Card Utilities: Select "Execute" on the Execute Card Utilities screen to run the accessory board configuration utilities.

- ◇ Follow the instructions on the screen and in the network operating system's installation instructions to perform the manual NOS installation.
- ◇ For Manual NOS Installation Only: Before you perform a manual NOS installation, print out instructions and create NOS-specific driver diskette(s), as follows:
 - a. Create Drivers Diskette: Select Create Drivers Diskette(s) to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
 - b. Print and Read Instructions: On the Show NOS Installation Instructions screen, select "Save to Disk" to copy the NOS installation instructions to disk. Then print them from disk. Read the instructions first, and then follow them to manually install the NOS.
- ◇ Install NOS:
 - a. Automated NOS Installation: For certain versions of Novell NetWare / IntranetWare or Microsoft Windows NT Server, Configuration Assistant formats and partitions the hard disk drive. Installation Assistant then guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration or for network interface cards on HP's Tested Products List.

or
 - b. Manual NOS Installation: Follow the instructions on the screen and the network operating system installation instructions that you printed.
- 15. Install HP TopTools: Refer to the *HP NetServer Server Management Reference Guide* and install HP TopTools.
- 16. Refer to Information Assistant on the *HP NetServer Online Documentation CD-ROM* for further information about your HP NetServer. See Chapter 11, "Information Assistant," for information.
- 17. Test and troubleshoot as necessary.

Refer to Chapter 12, "Troubleshooting."

Your LH 3000r or LH 3000 installation is complete.

Shipping the fully-configured HP NetServer

Label each cable and component to facilitate re-assembly.

- If racked, remove all components from the rack, including external mass storage.
- For both rack-mounted and pedestal NetServers, repack the components in the original packing material and prepare them for shipment.

CAUTION

It is critical to disassemble and repackage all electronic components before reshipment. Electronic components (especially hard disk drives) can sustain damage when shipped in rack enclosures.

2 Controls, Ports, and Indicators

Introduction

Before installation, familiarize yourself with the controls, ports, and indicators.

Front of the Chassis

Use the front panel console from the front of the HP NetServer.

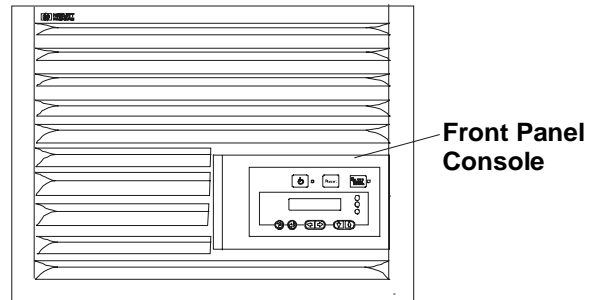


Figure 2-1. LH 3000r Bezel and Front Panel Console

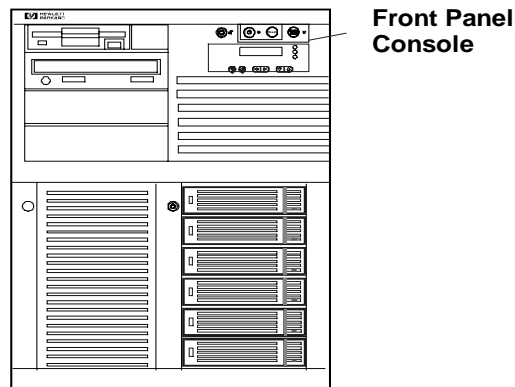


Figure 2-2. LH 3000 Bezel and Front Panel Console

Front Panel Console

Figure 2-3 shows the HP NetServer LH 3000's Front Panel Console (the HP NetServer LH 3000r is similar, but has no lock).

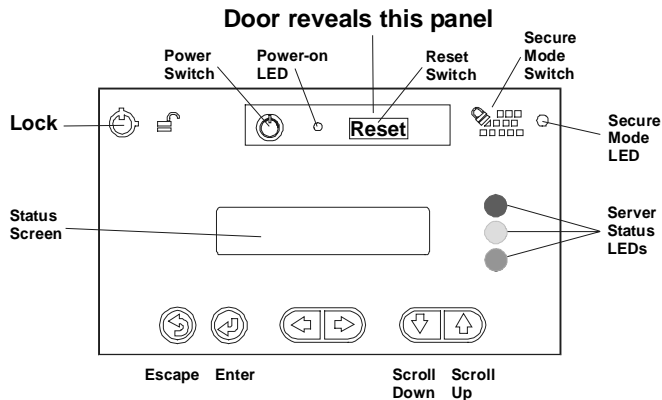
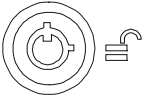
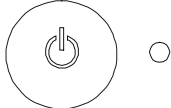
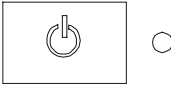


Figure 2-3. Front Panel Console

Table 2-1. Front Panel Console Switch and Indicator Definitions







Control	Description
Lock (LH 3000 only)	Locks system to prevent unauthorized use.
	Note that locking and unlocking of the enclosure is reported to the system event log (SEL).
DC Power Switch and LED	Turns the HP NetServer on and off. This switch is under the door on the front panel. Push once to turn on, once more to turn off. As long as the AC power is connected to the HP NetServer, standby power is present.
	
	
	<ul style="list-style-type: none">• If the LED is steady green, then the HP NetServer is powered-up.• If the LED is flashing green, the NetServer is in a power-save mode.• If the LED is off, but the two-line display has a message, standby power is present.• To go into power-save mode, depress the power switch; you must press it for over four seconds to effect a power-down.

Viewing System Information

Use the HP NetServer's status screen and buttons to view system configuration information, a log of current and past conditions, replaceable parts information, adjust screen contrast, and more.

NOTE The small door over the Power and Reset buttons prevents someone from accidentally powering down or resetting the NetServer. Open it to use the Power and Reset buttons.

Table 2-2. Front Panel Console Buttons

Button Name	Description
 Escape	Return to a previous menu.
 Enter	Select an item from a menu.
 Down Arrow	Scroll down one line through the current screen or menu.
 Up Arrow	Scroll up one line through the current screen or menu.
 Left Arrow	Adjust contrast (when adjust contrast menu selected).
 Right Arrow	Adjust contrast (when adjust contrast menu selected).

NOTE The buttons and menus operate when the HP NetServer has powered down or hung, as long as the NetServer is plugged in. During POST (power-on self-test) the buttons and menus are disabled temporarily so that the status screen can display POST and boot messages.

Main Menu

This is the status screen default display for the LH 3000:

```
HP NetServer
LH 3000
```

1. To reach the main menu from this default screen, press the **Enter** button.

NOTE	The status screen displays two lines of an entire menu at a time.
-------------	---

This is the entire Main Menu:

```
***Main Menu***  
  
>Event Log  
>FW Info  
>System Info  
>Component Info  
>Service  
>Adjust Contrast
```

Menus beginning with a greater-than symbol (>) indicate sub-menu selections.

2. Use the arrow buttons to move the cursor to your selection and press the **Enter** button.
A cursor highlights the currently selected line.
3. To return to the Main Menu from one of these selections, press **Escape**.
4. To exit the Main Menu, press **Escape**.

Event Log Menu

The Event Log menu has information about current and resolved events. The menu provides a list of all events currently in the log. These may be errors or normal system events like a system boot.

NOTE	You can view system events in the FPC status screen and in the Event Log Report Utility in NetServer Utilities on Navigator. The details may differ slightly.
-------------	--

1. Select Event Log from the Main Menu.

The first two lines of the log appear on the NetServer's front panel display:

```
****Event Log****  
>008^ POST Error
```

2. Use the arrow buttons to see the complete list.

This is a sample event log:

```
****EventLog****
>008^ POST Error
>007^ TempError
>006 CPU Failure
>005 POST Error
>004 Volt Error
>003 CPU Failure
>002^ POST Error
>001 System Boot
```

Each line includes a brief summary of a log entry, including the log entry number. An "^" on a log entry means the problem is current.

3. To read the complete log for an event, use the arrow keys to select the entry and press **Enter**.

An example of a complete log providing details about two events, 001 and 008, appears below.

```
>001 System Boot
Entry #001
07 /22 /99
10 :27 :15
System Boot
Event
>008 POST Error
Entry #008
Critical Pending
07 /22 /99
10 :27 :15
Proc. 2 FRB3
Failure
```

4. Use the arrow keys to scroll through the entire log.
5. To return to the Event Log menu, press **Escape**.
6. Press **Escape** again to return to the Main Menu.

FW Info (Firmware Information) Menu

The FW Info menu displays the versions of all firmware components in the system.

1. Select FW Info from the Main Menu.

A display similar to the one shown below appears on the NetServer's front panel display.

```
**FW Info**
```

2. Use the arrow buttons to scroll down through the rest of the information.

NOTE

If the system cannot detect one of the components in this menu -- for example, the TopTools Remote Control card (RCC) -- the word "absent" appears next to the component in place of a version number.

3. Press **Escape** to return to the Main Menu.

HW System Info Menu

The System Info menu displays the NetServer's configuration information. Information includes the number, speed, and type of CPUs, cache information, and the amount of RAM on each memory board.

1. Select System Info from the Main Menu.

A display similar to this appears on the NetServer's status screen.

```
**System Info**
```

```
No. Of CPUs=x
```

2. Use the down-arrow button to scroll through the rest of the information.

A full screen of the display would appear as shown below, but the actual display is still limited by two viewing lines at time.

```
**HW Sys Info**
```

```
No. Of CPUs=x
```

```
CPU speed 500MHz
```

```
CPU type PIII
```

```
L2 Cache xxxx KB
```

```
LFT CPU1 stepping xx
```

```
LFT CPU2 stepping xx
```

```
Mem slot1 xxxxMB
```

```
Mem slot2 xxxxMB
```

```
Mem slot3 xxxxMB
```

```
Mem slot4 xxxxMB
```

3. Press **Escape** to return to the Main Menu.

Component Info Menu

To see the chassis' part numbers and serial numbers:

1. Select Component Info from the Main Menu.

A display similar to the one shown below appears on the status screen:

```
*Component Info*
Asset Tag:
```

2. Use the down-arrow button to scroll through the rest of the information.

An example of a full screen display appears below.

```
*Component Info*
Asset Tag:
AAAAAAAAAAAAAAAA
Product Part:
nnnn-nnnn
Product Serial
AAAAAAAAAAAAAAAA
Chassis Part:
nnnn nnnn
Chassis Serial:
AAAAAAAAAAAAAAAA
```

3. Press **Escape** again to return to the Main Menu.

Service Menu



This is the Service display. It contains the NOS Memory Dump menus.

```
*****Service*****
>NOS Memory Dump
```

Adjust Contrast Menu

This is the Adjust Contrast display.

```
*Adjust Contrast  
== {XXXXXXXX}==
```

1. To decrease contrast, press  (Left Arrow).
2. To increase contrast, press  (Right Arrow).
3. To save the contrast setting, press **Enter**.

Hard Disk Drive LED Indicators

Each disk drive module has two LEDs: one for status and one for activity. You can view these LEDs on the LH 3000 and the LH 3000r with the bezel open. For more information on hard drives, see Chapter 4, "Installing Mass Storage Devices."

Table 2-3. Hard Disk Drive LED Indicators

LED	Condition
Red Fast Flashing	Drive Fault
Amber Normal Flashing	Drive Failure Predicted
Green Solid	Drive/Slot Normal
Red Solid	12V Fault

NOTE The Activity LED for a drive flashes green when the drive is accessed.

Indicators and Controls behind the LH 3000r Front Bezel

Open the LH 3000r bezel to view these indicators:

- CD-ROM
- DAT
- Flexible Disk Drives
- Hard Disk Drives

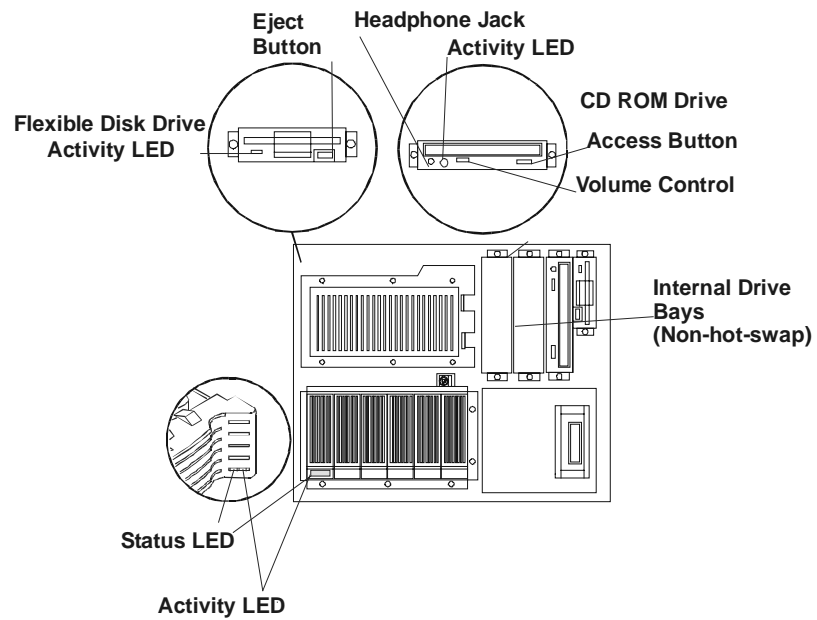


Figure 2-4. CD-ROM, Flexible Disk Drive, and Hard Disk Drive LEDs

Rear of the Chassis

The HP NetServer's rear panel includes communication ports, the AC power inlet, and the NetServer's two power supplies cages. The four hot-plug PCI slots LEDs are above right of power supply 4 (see Figure 2-5).

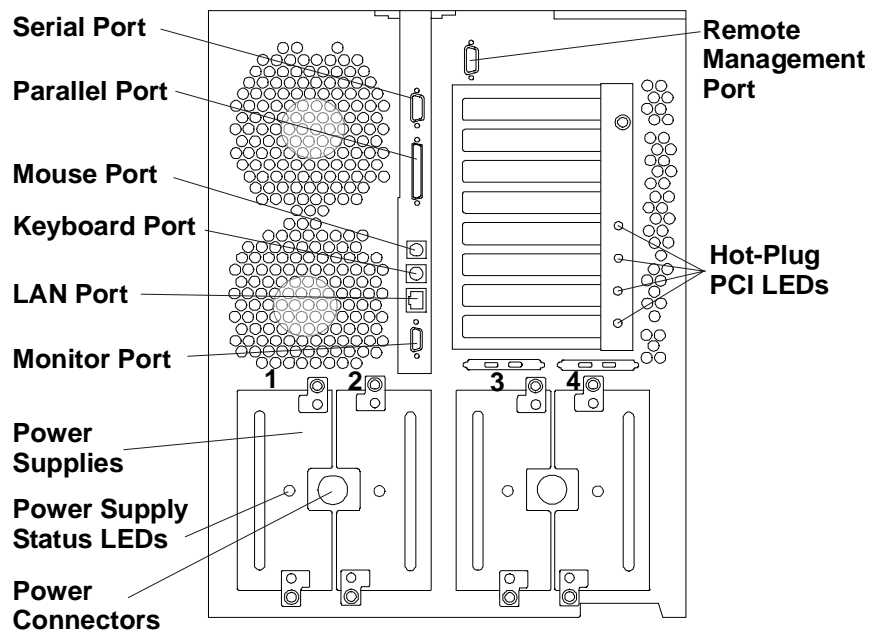


Figure 2-5. Rear Panel of the HP NetServer

The optional Redundancy Kit provides a third power supply. Since the HP NetServer requires two power supplies to run, a third power supply helps to prevent service interruptions. With the Redundancy Kit installed, a power supply can be hot-swapped.

LEDs at the Rear of the Chassis

PCI Attention LEDs

If a hot-plug board needs attention, its LED glows amber.

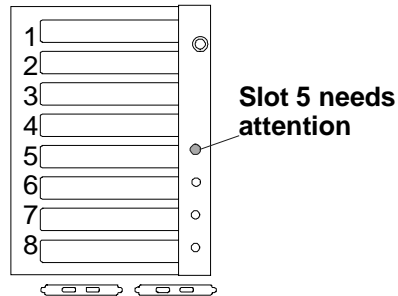


Figure 2-6. Amber Attention LED

When an amber PCI LED appears, you must remove the cover to see the power LEDs for each hot plug PCI slot (see Chapter 3, "Opening and Closing the HP NetServer").

PCI Power LEDs

Four pairs of very small LEDs are on the I/O board above left of each hot-plug PCI slot.

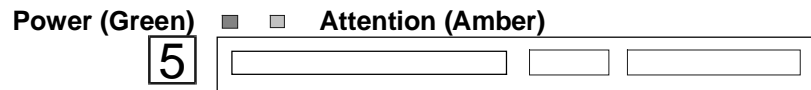


Figure 2-7. Onboard LEDs

The light from the small onboard LEDs is visible through the light pipes on the plastic slot separators.

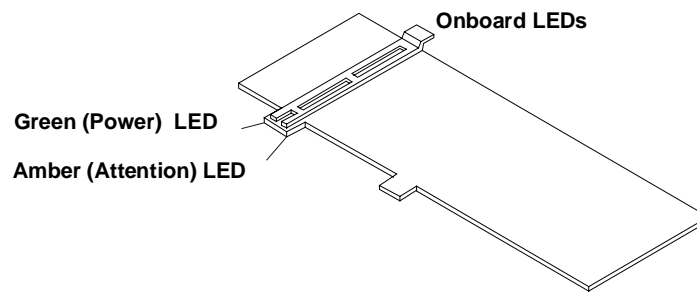


Figure 2-8. Light Pipes Display PCI LEDs

Table 2-4. PCI Hot Plug LEDs

Amber	Green	Status Indicated	Your Action
Off	On	Power to the slot is on, and the slot is operating normally.	Do not remove the board from the slot.
On	On	The slot needs attention, but power to the slot is on.	Do not remove the board from the slot.
On	Off	The slot needs attention, and power to the slot is off.	You can safely remove the board from this slot.
Off	Off	Power to the slot is off.	You can safely remove the board from this slot.

For more information on PCI Hot Plug boards, see Chapter 6, "Installing Additional PCI Boards," and Information Assistant on *the HP NetServer Online Documentation CD-ROM*.

Power Supply LEDs

Interpret the green LEDs on the power supplies in this way:

Table 2-5. Power Supply LEDs

Green LED	Indicates this NetServer Status:
Steady Green	The system is powered up.
Flashing	The system is in stand-by or power-save mode.
Off	The AC line is unplugged or the power supply has failed (see Chapter 12, "Troubleshooting").

LAN LEDs

The LH 3000 has two LEDs on either side of the RJ-45 connection. Interpret the LEDs in this way:

Table 2-6. Local Area Network LED Status

Green LED	Yellow LED	LAN Status:
ON/Flashing	OFF	The LAN is connected and data is being transferred at 10Mbps.
ON/Flashing	ON	The LAN is connected and data is being transferred at 100Mbps.
OFF	OFF	The LAN is not connected or is not operational (see Chapter 12, "Troubleshooting").

Connecting the HP NetServer to AC Power

When you connect the HP NetServer to an AC power source, the server temporarily draws additional current. This occurs even when the system is in standby mode. This "inrush current" is much greater than the server's normal operating needs. Generally, your external AC power source can handle the inrush current.

If you install several HP NetServers on one circuit, precautions are necessary. If there is a power failure and power is then restored, all the servers immediately begin to draw inrush current at the same time. If the circuit breakers on the incoming power line have insufficient capacity, they may trip and thus prevent the servers from powering up.

When preparing your site for installation, allow for the additional inrush current. Follow these circuit breaker recommendations before installing the server at your site:

- In North America, use a 20-amp-minimum circuit with one NEMA AB1 class 14B breaker for each 16-amp Power Distribution Unit (PDU).
- In Europe:
 - ◊ For a single NetServer in a rack, use a 15-amp-minimum circuit with one IEC MCB C-type breaker for each 16-amp PDU.
 - ◊ For multiple NetServers in a rack, use a 15-amp-minimum circuit with one IEC MCB D-type breaker for each 16-amp PDU.

NOTE	Each 16-amp PDU can accommodate a maximum of two NetServers.
-------------	--

When the proper power supply is available, connect the NetServer to the AC power source.

Power-On Tests

The HP NetServer runs a set of diagnostic tests when it is first connected to a power source. If the LH 3000r passes the tests, you will see:

HP NetServer LH 3000r

If the HP NetServer does not pass the tests, you will see:

<error code> Display now?

Press **Enter** to view the error message. Refer to the *HP NetServer Navigator CD-ROM* to get an interpretation of the error code.

Power-Up and Power-Down Procedures

Power-Up Procedure

1. Ensure the HP NetServer's power cord is connected to a power source, and the LED on each power supply is flashing green.
2. Press the power switch when prompted by the operating system.

CAUTION	The power supplies continue to provide standby voltage to the NetServer until the power cord is disconnected.
----------------	---

Power-Down Procedure

Follow this procedure when installing non-hot-swap and non-hot-plug components, such as tape drives and non-hot-plug PCI boards.

1. Log off all users and back-up files.

2. Follow instructions in your network operating system (NOS) documentation to gracefully shut down all networking software and applications.
3. Press the Power switch to shut down the HP NetServer. See Figure 2-3.

Normally, this completes the procedure.

Sleep States (ACPI)

The sleep states are available if your NOS supports power management based on the ACPI (Advanced Configuration and Power Interface). Sleep state is one of reduced power use. This state ends when the NetServer detects activity (mouse, keyboard, or certain types of LAN activity) and returns to a fully operational state.

In this sleep state, the NetServer appears to be off, indicated by no display on the monitor and no activity for the CD-ROM or internal hard drives. However, ACPI control provides at least three power states and depending on the NOS and its ability to change the sleep state program.

- The first state is normal power On.
 - ◊ To go to a fully powered-on state, press the front panel Power switch for less than four seconds (default).
 - ◊ To go to a sleep state, press the power switch for less than four seconds.
- The second state is a sleep or suspend state.

In this state there are no internal operations taking place, except for the internal clock and the cooling fans. This includes no activity for the CPUs, CD-ROM, or internal hard disk drives. The NetServer appears to be off except for the sound of the fans and the active LCD display on the front panel, which indicates *System is in ACPI sleep mode* and the green power LED is flashing on and off.

 - ◊ To enter a sleep state, press the Power switch for less than 4 seconds.
 - ◊ To exit a sleep state, press the power switch for less than 4 seconds and full operation is restored, including the LCD display and the power LED.
- The third state is the normal power shutdown.

All activity stops except the internal clock and the front panel LCD display, which reads *System is powered off*, unless the power cord is removed from the power source.

- ◇ To go to a fully powered-down state, press the front panel Power switch for more than 4 seconds.
- ◇ To go to a fully powered-up state, press the power switch for less than 4 seconds (default) and full operation is restored, including the status screen display and the power LED.

NOTE

A NOS may provide programming features to add more sleep states, to change the activation time for each state, and to shut down or wake up the NetServer at certain times, depending on the way the NOS interface is programmed. This option can be provided through the TopTools Remote Control card (Wake on RTC) or wake up through a LAN connection (Wake on LAN).

3 Opening and Closing the HP NetServer

Introduction

Use this chapter to see how to open and close the HP NetServer to add components. Components such as DIMMs and processors are on the system board shown outlined below.

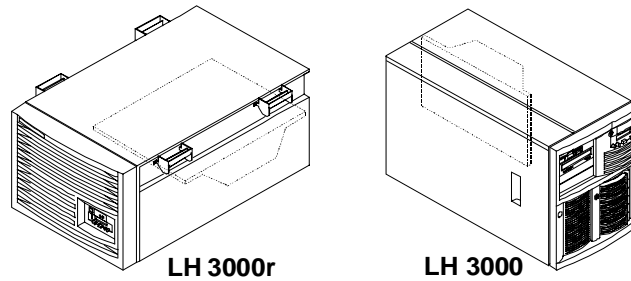


Figure 3-1. System Board Assembly Location

WARNING

Before removing covers, disconnect the power cords and unplug telephone cables. If possible, shut down the operating system. Disconnect the power cords to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages.

Wear a grounded wrist strap and use a static-dissipating work surface when handling NetServer components.

Note that the power switch does not turn off the standby power. Disconnect the power cords to turn off standby power.

NOTE	If the backlight on the LCD display is on, standby power is also on.
-------------	--

Tools Required

- Torx 15 Driver
- Torx 25 Driver (rack-mount only)
- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Removing the LH 3000r Covers

1. Extend the anti-tip foot from under the front of the rack.

WARNING	This anti-tip device must be extended to prevent the rack and NetServer from tipping over, which could damage the NetServer and injure people.
----------------	--

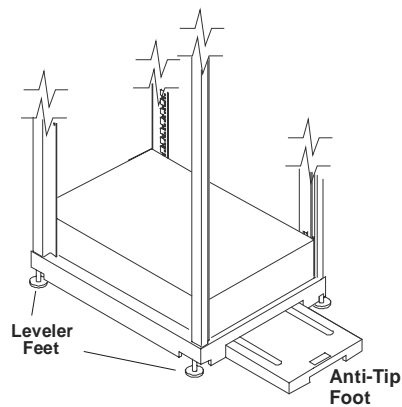


Figure 3-2. Rack Anti-tip Foot

2. Remove the bezel from the front of the HP NetServer by swinging the bezel open (past 90 degrees) until it releases from the three posts on the bezel hinge.

The bezel has three clips that mount onto a hinge assembly, which is secured to the HP NetServer chassis.

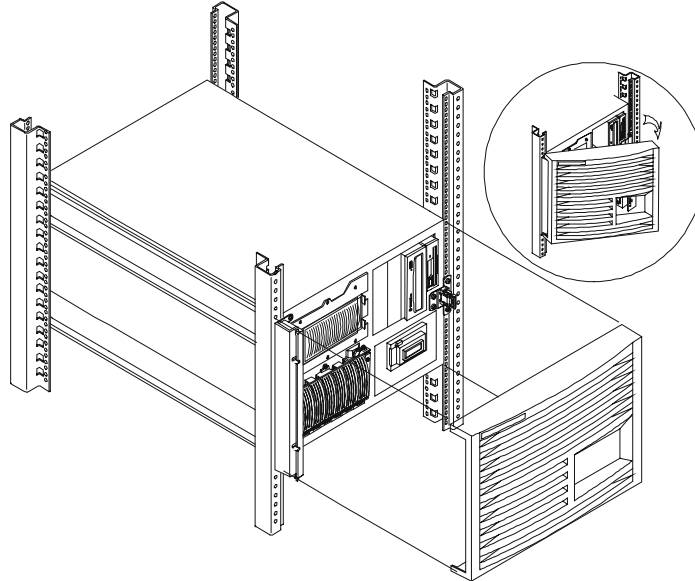


Figure 3-3. Removing the HP NetServer LH 3000r Bezel

3. Use a Torx 15 screwdriver to unscrew the four screws, as shown in Figure 3-4.
4. Do not unscrew the entire hinge or bracket from the HP NetServer. Remove only the outer screws so the hinge and the bracket remain attached to the NetServer chassis.

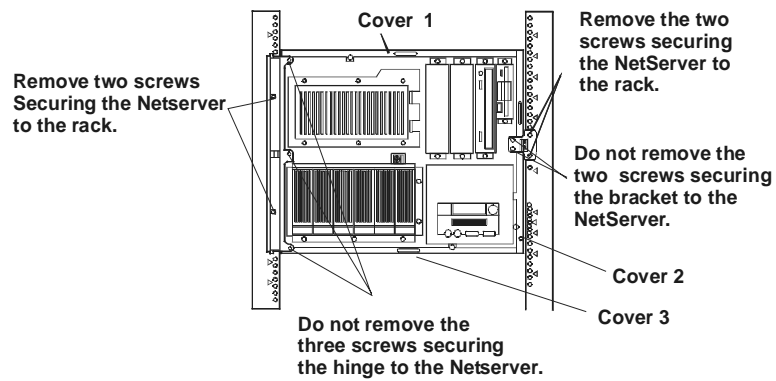


Figure 3-4. Front of LH 3000r Screw and Cover Locations

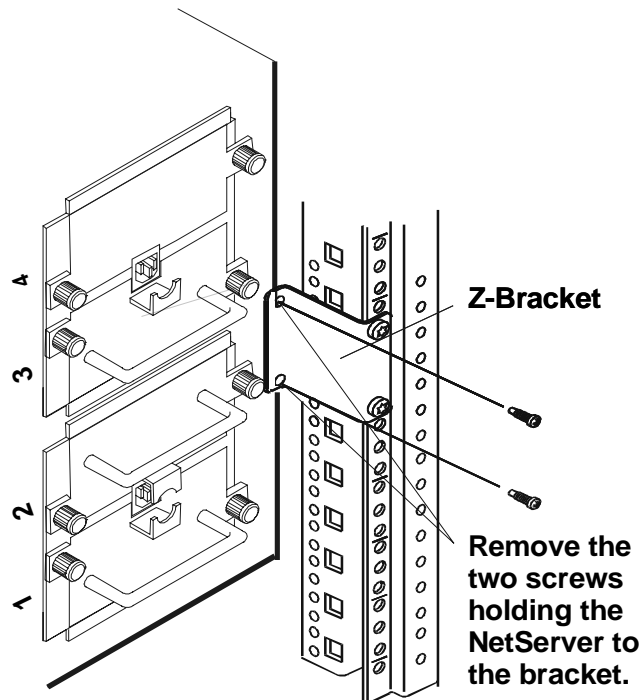


Figure 3-5. Remove Z-bracket

5. The z-bracket is used only during shipment to secure the NetServer to the rack. To remove the z-bracket, remove the two screws that connect the z-bracket to the column at the rear of the NetServer. Save the z-bracket for future use.

6. At the front of the NetServer, pull the NetServer forward from the rack until you hear the lockout device engage with a click.

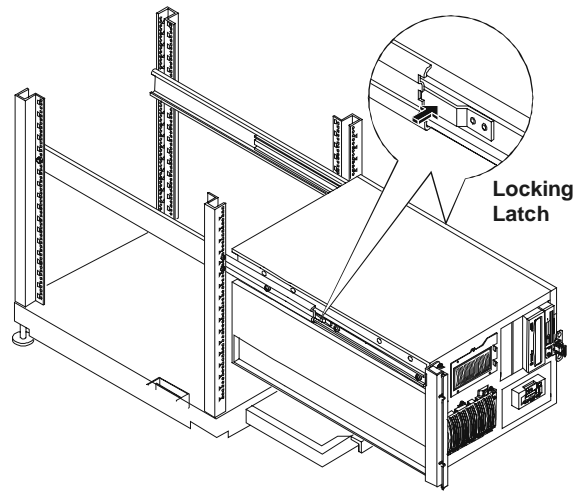


Figure 3-6. Locking Latch

CAUTION	The HP NetServer covers are heavy. Support them as you remove them, and allow room to move them away from the HP NetServer and for storage.
----------------	---

7. Remove Cover 1 by loosening the thumbscrew and sliding the cover forward to disengage it. Lift it up and away from the chassis. See Figure 3-7.

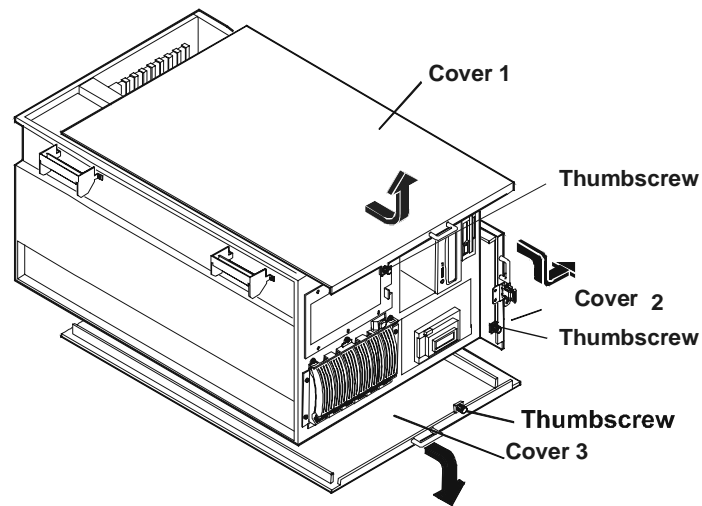


Figure 3-7. HP NetServer LH 3000r Covers

8. Remove Cover 2 by supporting it with your hand, then loosening the thumbscrew and pulling the cover forward to disengage it. Lift it away from the chassis (see Figure 3-7).
9. Remove Cover 3 by supporting it with your hand, and loosening the thumbscrew with the other hand. Pull the cover forward to disengage it and catch it as it falls away from the chassis.

Replacing the LH 3000r Covers

CAUTION	Do NOT operate the NetServer for more than thirty minutes with any cover (including power supplies and disk drives) removed. Otherwise, damage to system components may result due to improper cooling airflow.
----------------	---

The two large covers (Covers 1 and 3) with handles are interchangeable. To replace them:

1. Insert the two metal tabs, at the end opposite the handle, into the two openings at the top and bottom corners of the chassis. Hold the cover in place, but do not slide the tabs in completely yet.
2. Align the four, widely-spaced, metal tabs on the cover's long, top edge against the leftmost edge of the four widely-spaced openings on the top of the chassis.
3. Hold the top of the cover in this position with one hand, while pressing the bottom edge of the cover with the other hand until the cover is completely flush against the chassis.
4. Gently slide the cover until the shorter edge (no handle end) snaps into place.
5. Tighten the thumbscrew at the front of the top cover.
6. Check that the four closely-spaced metal tabs are in their four openings at the rear of the HP NetServer. The cover is secure when all edges are flush against the chassis and you cannot easily shift it.

Repeat for the other side cover.

7. For the top cover (2), insert the four metal tabs, at the end opposite the handle, under the flange at the rear of the chassis.
8. Press the top cover back to the rear of the chassis, then slide it to the left to engage the five tabs on the left side of the cover. The cover can then be moved backward allowing the thumbscrew to be tightened.
9. Replace the bezel by placing the two tabs at the bottom of the bezel into the corresponding slots on the chassis and snapping the bezel into position at the top of the chassis.

Removing the LH 3000 Covers

1. Unlock the bezel, using the supplied key.

The bezel connects to the chassis with two snap-in connectors inside its top left and right corners and two tabs that fit into two slots on the bottom of the chassis.

2. Remove the bezel.
 - a. Pull bezel toward you until it unsnaps.
 - b. Lift the bezel forward and upward from the chassis face.

Pull bezel toward you, then up and away from the front panel, releasing the tabs from the slots at the bottom of the front panel.

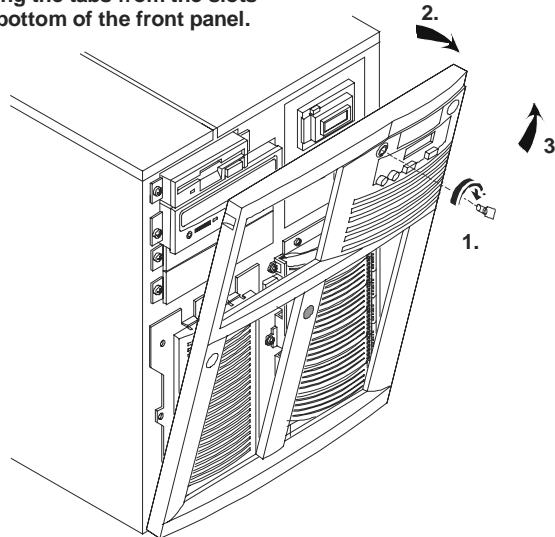


Figure 3-8. Removing the HP NetServer LH 3000 Bezel

CAUTION

The NetServer covers are heavy. Support them as you remove them, and allow room to move them away from the NetServer and for storage when removed.

3. Once you have removed the bezel, remove Cover 1 by loosening the thumbscrew and then pulling the cover forward to disengage it. Lift it outward and away from the chassis (see Figure 3-9).
4. Remove Cover 2 by loosening the thumbscrew, pulling the cover forward and then slightly sideways to disengage it. Lift it up and away from the chassis.
5. Remove the right cover (Cover 3) by loosening the thumbscrew and pulling the cover forward to disengage it. Lift it outward and away from the chassis.

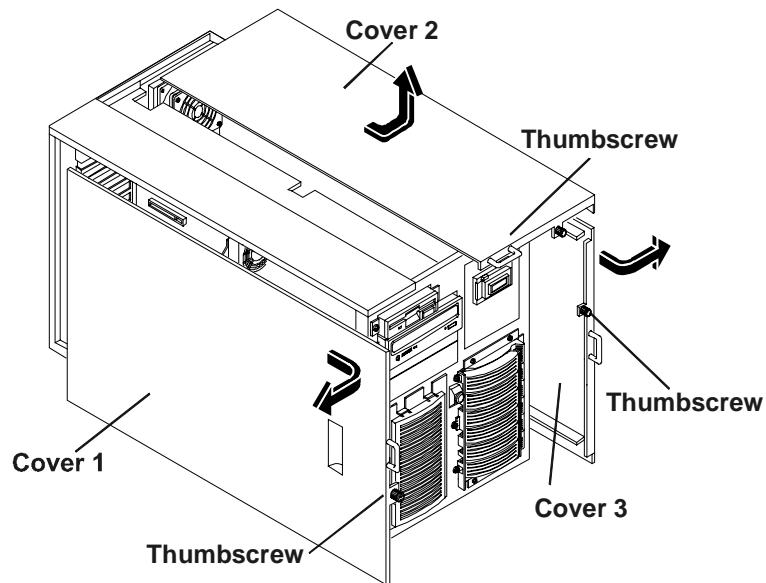


Figure 3-9. HP NetServer LH 3000 Covers

Replacing the HP NetServer LH 3000 Covers

CAUTION	Do NOT operate the NetServer for more than thirty minutes with any cover (including power supplies and disk drives) removed. Otherwise, damage to system components may result due to improper cooling airflow.
----------------	---

1. For each of the side covers, insert the two metal tabs, at the end opposite the handle, into the two openings at the top and bottom corners of the chassis. Hold the cover in place, but do not slide the tabs in completely yet.
2. Align the four, widely-spaced, metal tabs on the cover's long, top edge against the top edge of the four widely-spaced openings on the top of the chassis.
3. Hold the top of the cover in this position with one hand, while pressing the bottom edge of the cover with the other hand until the cover is completely flush against the chassis.
4. Check that the four closely-spaced metal tabs are in their four openings at the rear of the HP NetServer. The cover is secure when all edges are flush against the chassis and you cannot easily shift it.
5. Gently slide the cover until the rear edge snaps into place.
6. Tighten the thumbscrew at the front of the top cover.
7. For the top cover, insert the four metal tabs, at the end opposite the handle, under the flange at the rear of the chassis.
8. Press the top cover back to the rear of the chassis, then slide it to the left to engage the five tabs on the left side of the cover. The cover can then be moved backward allowing the thumbscrew to be tightened.
9. Snap the bezel on the bezel hinge and swing the bezel closed engaging the bezel latch (see Figure 3-8).
10. Lock the bezel using the supplied key and remove the key from the front of the NetServer.

4 Installing Mass Storage Devices

Introduction

The HP NetServer standard configuration is:

- One hot-swap mass storage cage (primary)
 - ◊ Configured with a single SCSI bus
 - ◊ Installed with requested drives
 - ◊ With filler panels in the slots not occupied by drives
- An enclosure for a second hot-swap mass storage cage (secondary)
- A flexible disk drive
- A CD-ROM 32x drive
- Non-hot-swap mass storage shelves

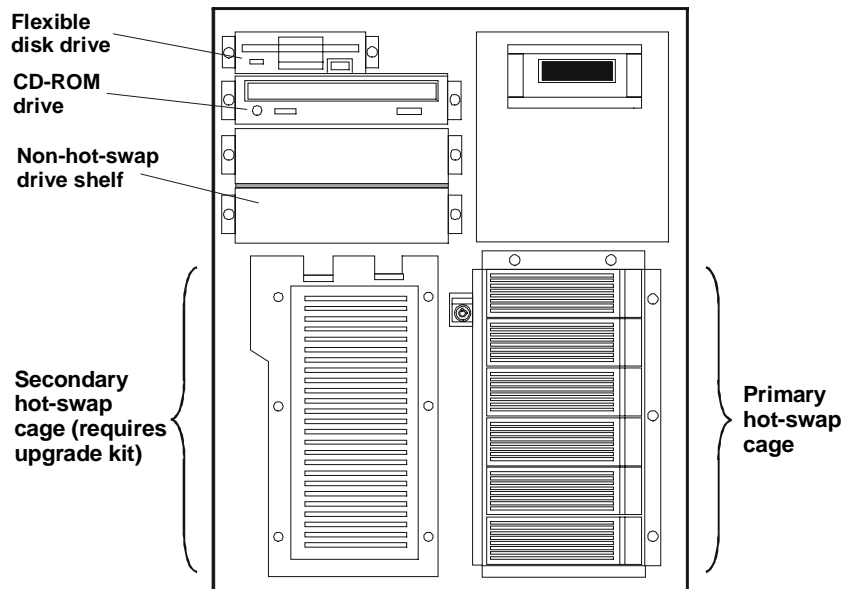


Figure 4-1. Standard Mass Storage Configuration

Duplex Board

Preinstalled

A small number of systems have a duplex board preinstalled. The duplex board supports dual-bus mass storage configurations. Duplex hot-swap drive configurations and SCSI IDs are later in this chapter.

Upgrade

If you are installing the duplex board, refer to the *HP NetServer Duplex Kit Installation Guide* that came with the Duplex Board Accessory Kit for other information.

Mass Storage Guidelines

Read this section prior to installing mass storage drives for a successful installation.

Selecting SCSI Devices

Hot-Swap

Hot-swap mass storage comprises either a low profile (1-inch) or half-height (1.6-inch) drive in a tray. This is called a module. For the hot-swap shelves use HP Ultra-2 (LVD) or Ultra-3 SCSI 3.5-inch hard disk drives. HP hot-swap drives are set for LVD SCSI operation and without device ID or termination. Do not change these settings.

NOTE

A half-height drive takes most of two slots. You must use a drive spacer to close up the remaining space.

Non-Hot-Swap

For the non-hot swap shelves, use 3.5-inch or 5.25-inch single-ended (SE) SCSI devices. This bay supports either two half-height or three low-profile devices. You can order HP mounting kits for removable media devices or trays for 3.5-inch hard disk drives (both low-profile and half-height). You may use narrow/wide SCSI adapters on these devices.

SCSI Termination

Make sure that SCSI devices you install in *both* hot-swap and non-hot-swap bays do not have termination.

Hot-Swap Cage and Drive Configurations

This section describes mass storage configurations.

NOTE In the tables below, the absence of a number in the disk drive row indicates a spacer or filler panel is present in a slot.

Primary Cage - SCSI A

This is a block diagram of the standard LH 3000r cage configuration.

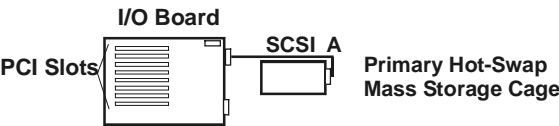


Figure 4-2. Primary Cage Configuration – Single Bus A

These are hot-swap drive configurations for the primary cage.

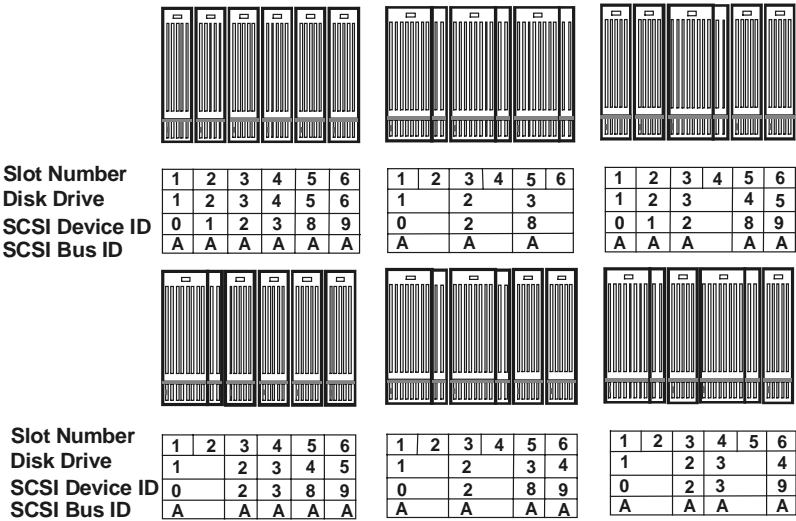


Figure 4-3. Rack-mount Primary Cage Single Bus Configurations

Secondary Cage - SCSI B

This is a block diagram of an optional LH 3000r cage configuration.

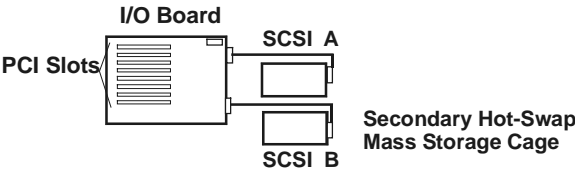


Figure 4-4. Secondary Cage Configuration – Single Bus B

NOTE This configuration requires the mass storage upgrade kit.

These are hot-swap drive configurations for the secondary cage.

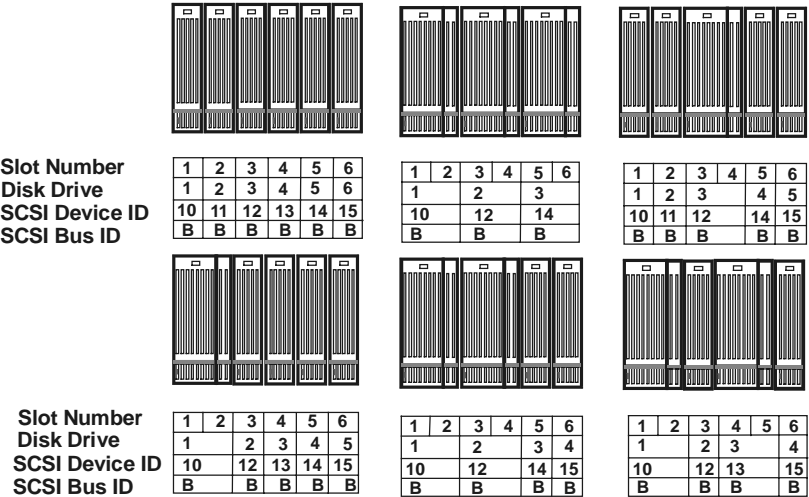


Figure 4-5. Rack-mount Secondary Cage Single Bus Configuration

Primary Cage Dual Bus - SCSI A and B

This is a block diagram of the LH 3000r cage duplexed.

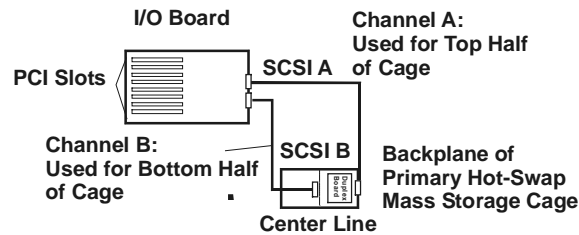


Figure 4-6. Primary Cage Duplexed

These are the drive configurations and SCSI IDs for the primary cage duplexed.

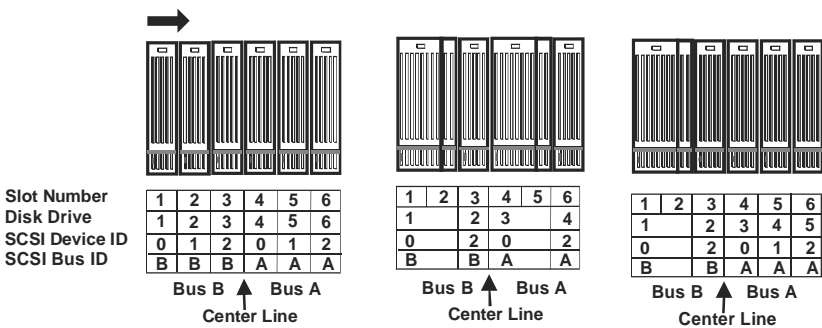


Figure 4-7. Rack-mount Duplex Mass Storage Configurations

NOTE

HP recommends the duplexed cage run off SCSI A and SCSI B so that both the top and bottom halves run at the same speed.

Primary and Secondary Cages Duplexed

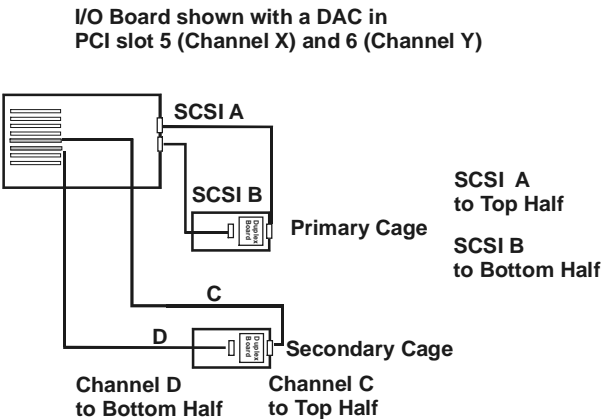


Figure 4-8. Both Cages Duplexed

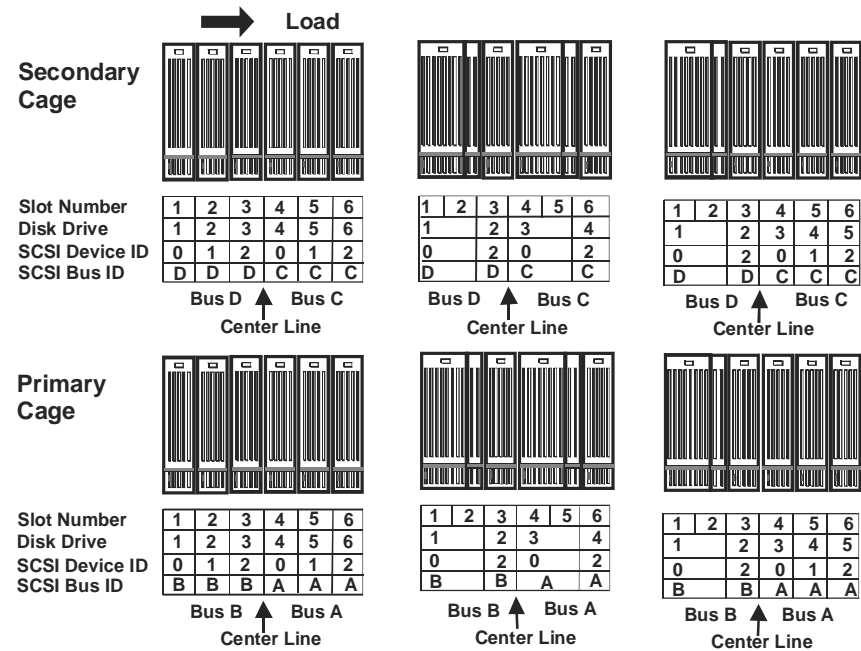


Figure 4-9. Duplex Drive Configurations

Pedestal Primary Cage Duplexed

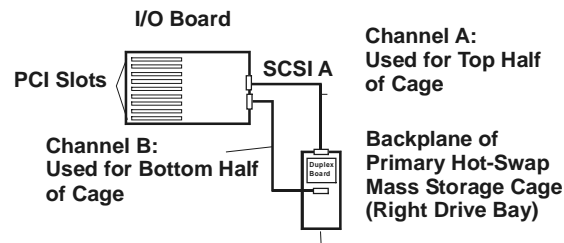


Figure 4-10. Single Bus

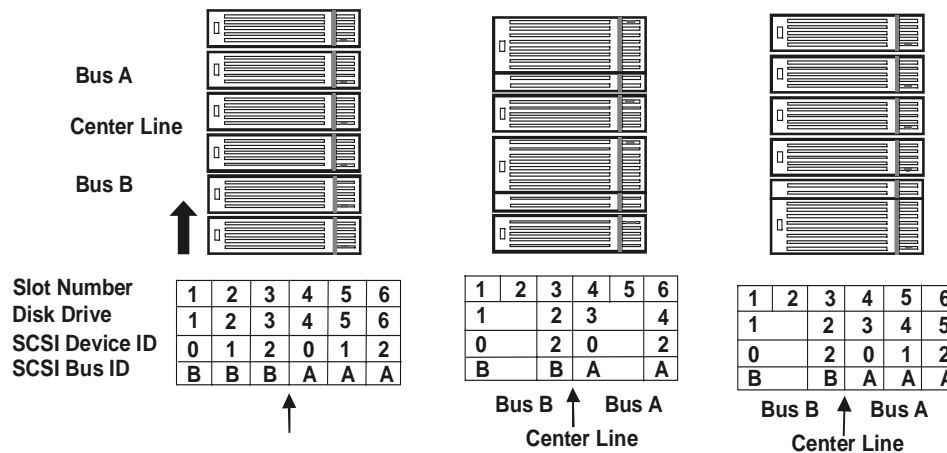


Figure 4-11. Drive Configurations for Pedestal

Boot Priority

This is the default boot priority for the LH 3000r and LH 3000:

1. IDE CD-ROM drive with a bootable CD-ROM
2. Flexible disk drive with a bootable flexible disk
3. Embedded SCSI controller or integrated HP NetRAID controller. SCSI channel A precedes channel B. On a SCSI bus, boot order follows the ascending order: 0, 1, 2, 3, . . .
4. PCI boards in slots in the following descending order: 8, 7, 6, 5, 4, 3, 2, and 1

NOTE

Once you have configured the HP NetServer, change this boot order using Setup. See Chapter 10, "Configuring the HP NetServer."

Use the Symbios Configuration Utility to configure the HP NetServer to use a PCI slot for boot devices. Refer to the Symbios Configuration Utility on the Information Assistant CD-ROM under LH 3000r/Configure/Hardware Configuration Utility/SCSI Configuration Utility.

Installing Hot-Swap Mass Storage

The procedure to install hot-swap mass-storage is the basically the same for all HP NetServers. Follow the steps in the sequence shown, skipping any that do not apply to your installation.

CAUTION

Protect the drive from static electricity by leaving it in its anti-static bag until you are ready to install it. Before handling the drive, touch any unpainted metal surface to discharge static electricity. When you remove the drive from the anti-static bag, handle it only by the frame.

Do not touch the electrical components. Place the drive on the anti-static bag whenever you set it down.

1. Remove bezel. See Chapter 3, "Opening and Closing the HP NetServer."
2. Remove necessary filler panels:

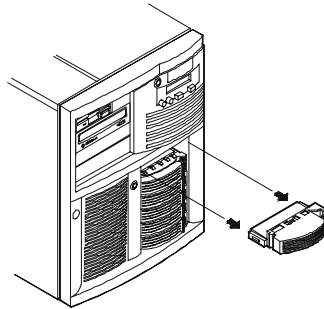


Figure 4-12. Hot Swap Drive and Filler Panel

- a. Press in the locking latch and insert your fingers.
- b. Using your fingers, pull the filler panel straight out. See Figure 4-12.

CAUTION

When installing more than one drive, do not stack drives on your work surface. Hard disk drives are very susceptible to mechanical shock and can be damaged by a drop as short as one-quarter of an inch. Take care when unpacking and handling the drive. If the drop would crack an egg, it will damage the drive.

3. Drive spacers attach to the disk drive module with four small feet.

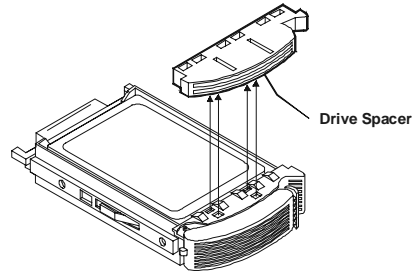


Figure 4-13. Removing a Drive Spacer

To remove a drive spacer from a disk drive slot:

- a. Slide the drive spacer back, a fraction of an inch away from your body.
 - b. Tilt up the front of the drive spacer to disengage the front two feet.
 - c. Pull the drive spacer forward slightly to disengage the back two feet and lift.
4. Open the drive module by pressing in on the locking latch at the end of the drive ejector handle and pulling open the handle.

CAUTION

Be careful when you open the ejector handle. Extreme force can snap off the handle. Be careful not to damage the light pipes as you insert the drive. They are very fragile.

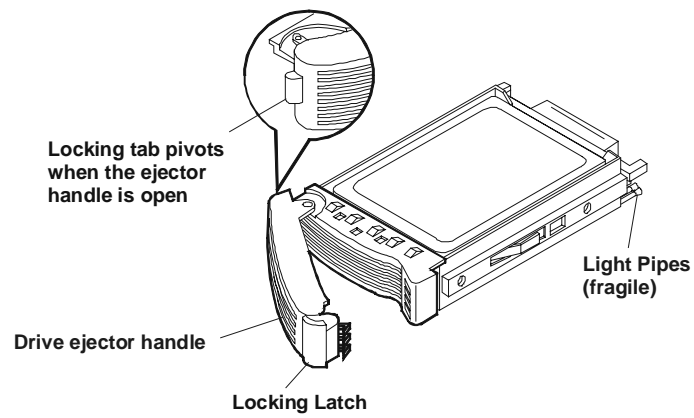


Figure 4-14. Ready Drive Module for Installation

5. With the drive ejector handle open, gently slide the module into the cage. Stop when you feel resistance.
6. With even pressure, gently close the ejector handle until the locking latch clicks shut.

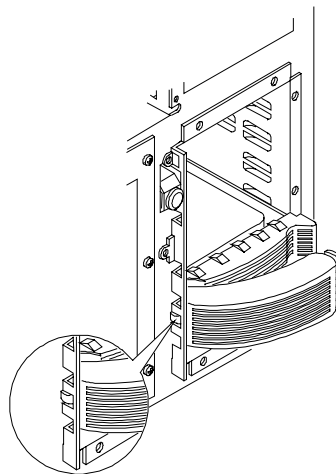


Figure 4-15. Locking Tab Location

NOTE	Closing the ejector handle engages the drive with the electrical connector in the hot-swap mass storage cage and seats the drive.
-------------	---

7. If the drive is unseated in the cage after closing the ejector handle, repeat steps 5 and 6.
8. Configure mass storage devices according to Chapter 10, "Configuring the HP NetServer."

Removing a Hot-Swap Hard Disk Drive Module

CAUTION	<i>You must remove the drive slowly to ensure the drive heads are parked prior to removal.</i> Follow these instructions to prevent handling damage, such as head slaps or head actuator unlocking.
----------------	---

1. To unlock the drive, push the locking latch in and then pull the ejector handle toward you. See Figure 4-15.
2. Gently pull the drive out about an inch to disengage the power connection.
3. Wait about 30 seconds for the drive to stop spinning and the drive heads to park.
4. Use your hand to support the bottom of the drive, while you slowly pull the drive straight out.

Do not allow the drive to fall.

5. Place the drive in an electrostatic-protected container. Do not stack drives.

Installing Non-Hot-Swap Mass Storage

Follow this procedure to install a flexible disk drive, CD-ROM, tape backup, or non-hot-swap hard disk drive.

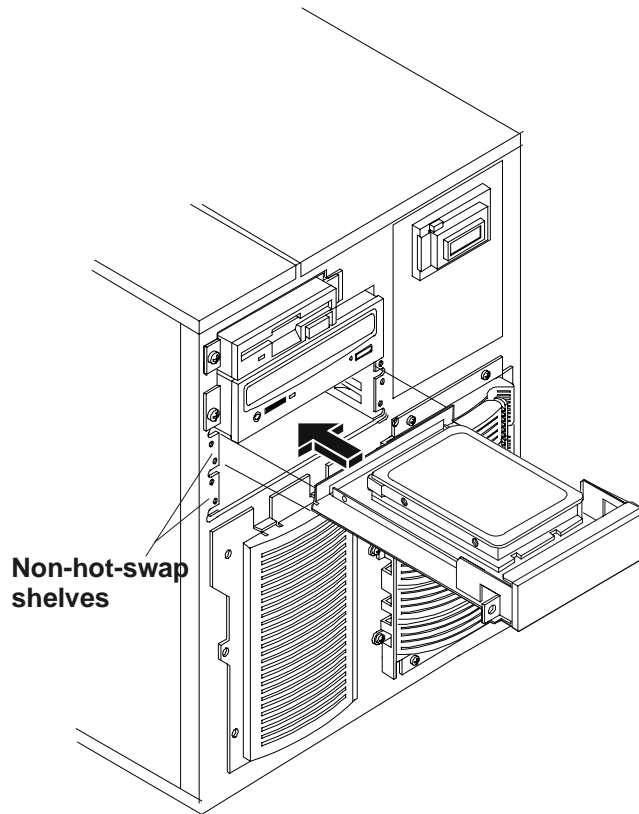


Figure 4-16. Non-Hot-Swap Shelves

CAUTION

Leave the drive in its anti-static bag until you are ready to install it. Before handling the drive, touch any unpainted metal surface to discharge static electricity. When you remove the drive from the anti-static bag, handle it only by the frame.

Follow the setup steps in the exact order shown below for a successful installation. Skip any steps that do not apply to your installation.

1. Log off all users and gracefully shut down the network operating system according to directions in your NOS documentation.
2. Power down the HP NetServer according to the instructions in Chapter 2, "Controls, Ports, and Indicators."
3. Disconnect the power cords and cables and, if necessary, label each one to support re-assembly.

CAUTION	The power supplies will continue to provide standby current to the NetServer until the power cable is disconnected.
----------------	---

4. For rack-mount and pedestal models, follow the instructions in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the server.
5. Select an available shelf for the device and remove the filler panel.
6. If the device you are installing is the boot device, check the boot priority.
7. Install the device on a mass storage tray following the directions included with the tray.
8. Connect the cable from the power supply and the SE SCSI cable from the I/O board to the device.
9. Follow the procedure in Chapter 3, "Opening and Closing the HP NetServer," for closing up the server.
10. Reconnect power and cables.
11. Configure the drive according to steps in Chapter 10, "Configuring the HP NetServer."

Restore the HP NetServer to normal operation.

This completes your non-hot-swap mass storage installation.

Connecting SCSI Sub-Systems

The second LVD SCSI connector, bus B, can be used to connect to peripheral sub-systems such as the HP RS/12 or DLT tape libraries.

NOTE	SCSI channel B has SE and LVD connectors.
-------------	---

CAUTION	Do not mix high voltage differential (HVD) driver and receiver devices with the SE, LVD (Ultra2), or multimode devices on the same SCSI bus.
----------------	--

Integrated HP NetRAID

The HP NetServer contains an integrated HP NetRAID controller, which puts the power of the HP NetRAID series of DACs (disk array controllers) in the NetServer.

Refer to the *Integrated HP NetRAID Controller Configuration Guide* for complete information. You can also find the guide on the following HP web site:

<http://www.hp.com/go/netserver>

NOTE	The HP NetServer ships with NetRAID as the default. If you plan to configure mass storage using LVD SCSI, you must change this option in the Setup utility.
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5 Installing Additional Memory

Introduction

This chapter describes adding memory to the HP NetServer LH 3000r and LH 3000. The standard configuration ships with one 128 MB DIMM in slot 0.

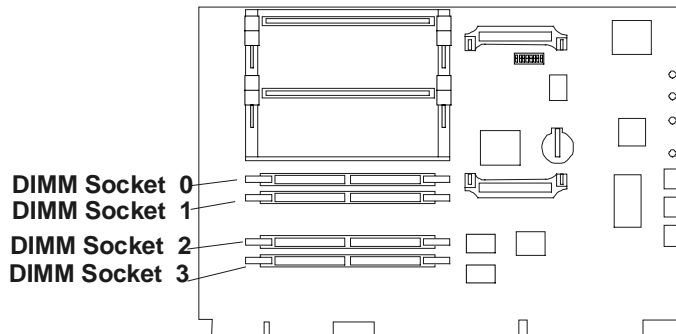


Figure 5-1. DIMM Sockets on System Board Assembly

Memory Guidelines

- Add DIMMs of these sizes:
 - ◊ 128 Mb
 - ◊ 256 Mb
 - ◊ 512 Mb
 - ◊ 1 GB
- Add memory in any order to the four slots.
- You can mix DIMM sizes. For example, you may place a 1 GB DIMM next to a 128 Mb DIMM.
- Maximum configuration is 4 GB.
- Do not rock the DIMM into place, but apply firm and even pressure until it is seated in the socket.
- Use only HP-supported DIMMs.

NOTE	If non-HP DIMMs are used, the NetServer will report this during boot.
-------------	---

Tools Required

- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Installing Memory in the LH 3000r and LH 3000

CAUTION	Extend the anti-tip foot prior to any work on a rack-mount server.
----------------	--

The installation procedure is the same for the rack-mount and the pedestal HP NetServers once you gain access to the system board assembly.

1. Log off all users and gracefully shut down the network operating system according to directions in your NOS documentation.
2. Power down the HP NetServer according to the instructions in Chapter 2, "Controls, Ports, and Indicators."
3. Disconnect the power cord and cables and, if necessary, label each one to support re-assembly.

CAUTION	The power supplies will continue to provide standby current to the NetServer until the power cable is disconnected.
----------------	---

4. For rack-mount and pedestal models, follow the instructions in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the server.

NOTE	In the LH 3000r this assembly is under the right cover; in the LH 3000 it is under the top cover.
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While you can perform the installation in the rack or in the pedestal, HP recommends that you remove the system board assembly to install components.

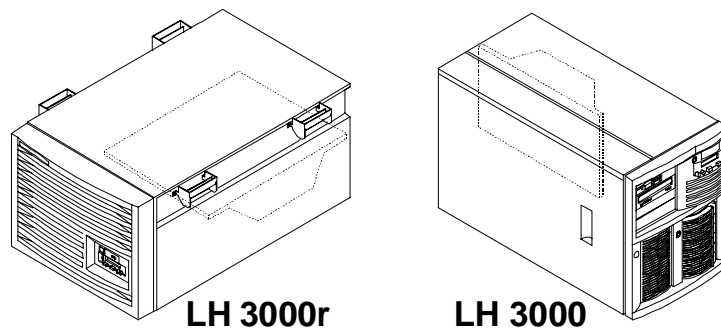


Figure 5-2. Location of System Board Assembly

WARNING

Always disconnect the power cord before removing the covers to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. Disconnect any telephone cables to avoid exposure to shock hazard from telephone ringing voltages.

5. Unlatch the blue retaining latches to release the board.

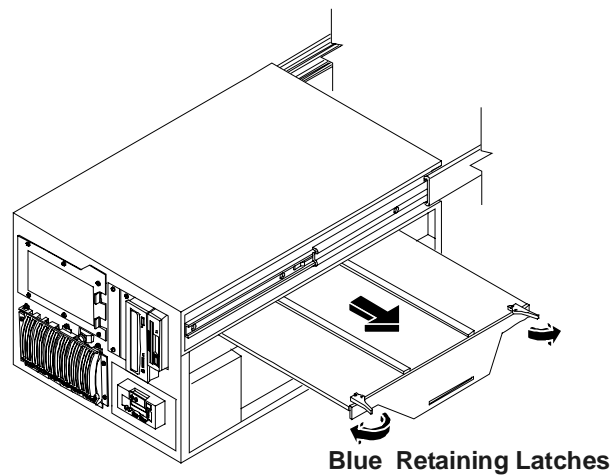


Figure 5-3. Removing the System Board from the Rack-Mount NetServer

CAUTION

The system board assembly weighs approximately 15 lbs. (7 kgs). Removing the board assembly with the assistance of another person is advised.

6. Pull the board out until it clears the chassis guides (see Figures 5-3 and 5-4).

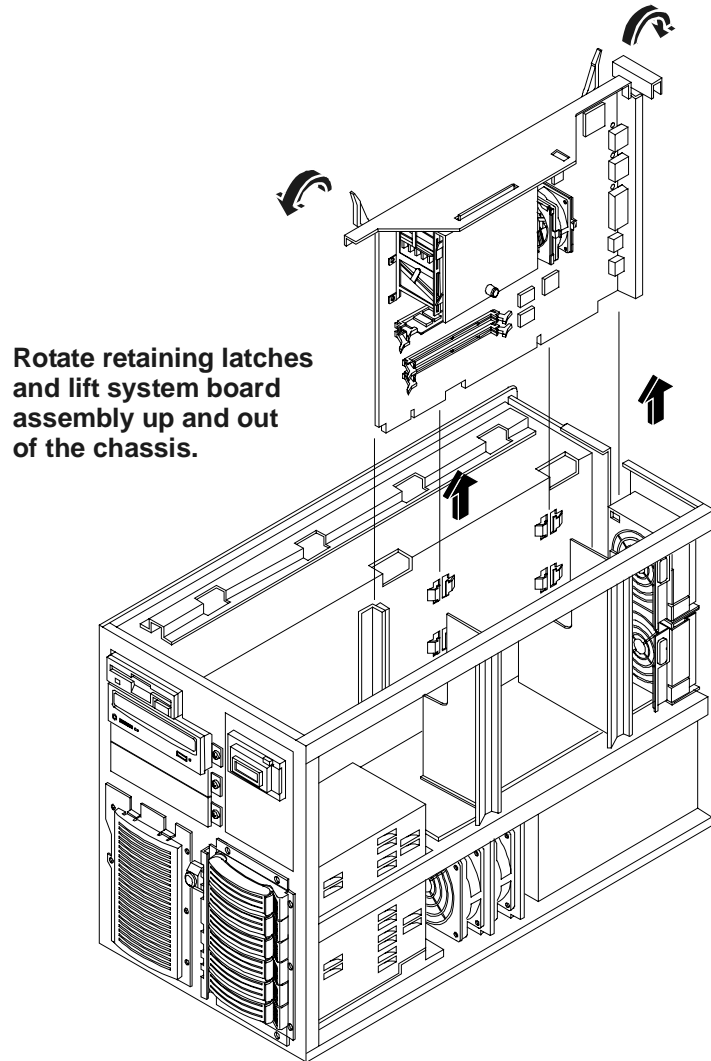


Figure 5-4. Removing the System Board from the Pedestal NetServer

7. Slide the system board assembly from the chassis and place it metal plate side down on an anti-static pad.
8. Install the DIMMs:
 - a. Spread the latches outward on each socket to receive a DIMM.
 - b. Remove a DIMM from its anti-static bag, handling the module by its edges.
 - c. Align the notches on the DIMM with the slot keys on the socket.

CAUTION	<i>Do not rock the DIMM into place, but apply firm and even pressure. If a gap exists between the retaining latches and the DIMM, remove and replace the module until no gap exists.</i>
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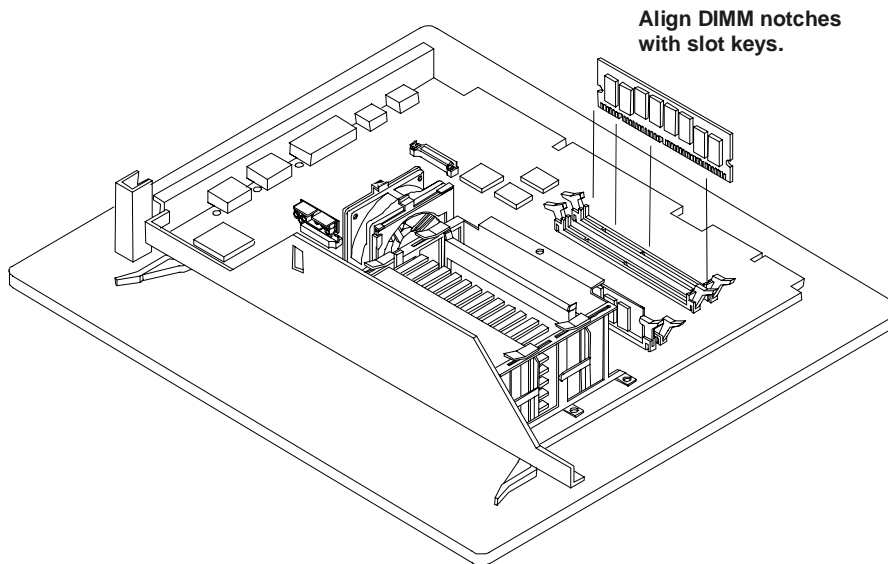


Figure 5-5. Align DIMM Notches with slot keys

- d. Press the DIMM into the socket until the latches close.

NOTE	If the latches do not close, repeat until they do.
-------------	--

Repeat step 8 to install all of the DIMMs for your memory configuration.

9. Carefully reinsert the system board assembly into its guides until the blue latches return to the flat, locked position.

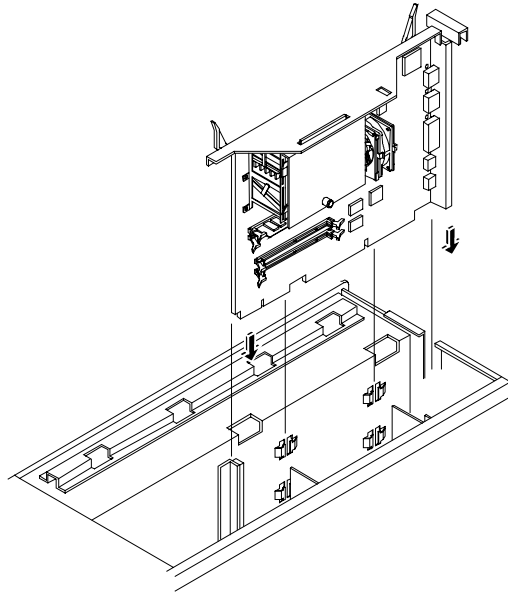


Figure 5-6. Install the System Board Assembly

10. Follow the procedure in Chapter 3, "Opening and Closing the HP NetServer," for closing up the server.
 11. Reconnect power and cables.
 12. Restore HP NetServer to normal operation.
- This completes the DIMM installation.

6 Installing Additional PCI Boards

Introduction

This chapter describes how to install accessory boards, during initial installations, into the I/O board. The I/O board is under Cover 1 on the **top** of the LH 3000r and under the **left** cover of the LH 3000.

If you want to do a "hot" add or "hot" replacement (with the HP NetServer powered up), go to *Hot Adding or Replacing Hot-Plug PCI Boards* at the end of this chapter.

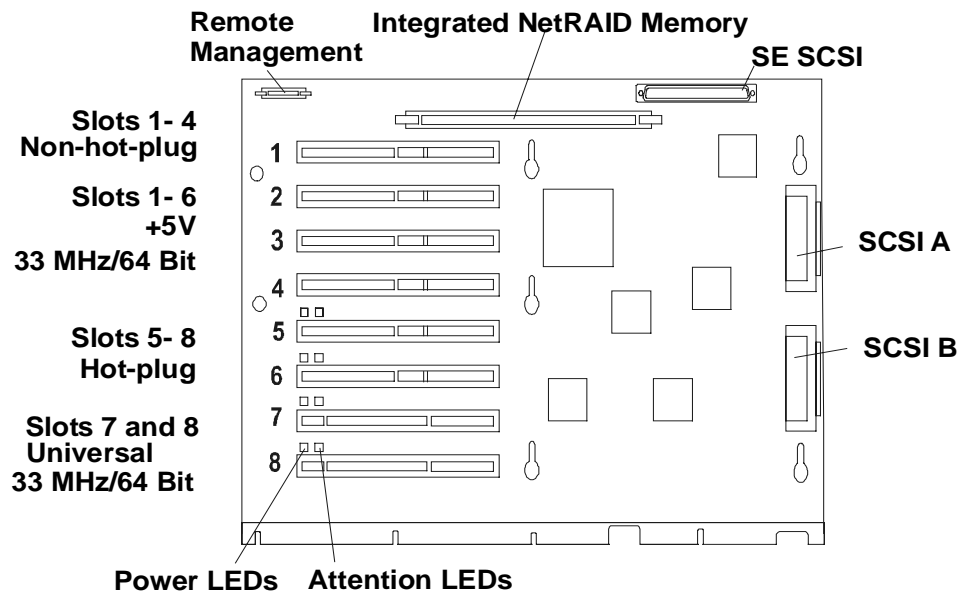


Figure 6-1. I/O Board

Slots 1 through 6 support +5 volt PCI boards. Slots 7 and 8 support +3.3 volt, +5.0 volt or Universal PCI boards. All eight slots accept 64-bit PCI boards. Slots 5 through 8 are hot-plug enabled.

The I/O board comprises:

- Eight PCI board slots
- Four pairs of PCI hot-plug LEDs
- Four rectangular separators to ease hot-plug board replacement
- Two SCSI connectors, A and B for hot-swap drives
- The SE SCSI connector for non-hot-swap drives
- The I/O Memory slot, which contains memory used by the Intel i960RD I/O processor for embedded RAID
- The Remote Management connector, linking the I/O board to the external connector on the rear panel
- Hot-plug connector connects to a side board, which has LEDs and switches for the hot-plug slots (5 – 8)

Guidelines

- Use the respective NOS software utility to:
 - ◊ Ensure the correct software drivers for the PCI board are loaded.
 - ◊ Verify correct operation.
 - ◊ Shut down power to hot-plug slots.

CAUTION

Do not attempt to install or remove **non-hot-plug PCI boards** with the HP NetServer in any kind of sleep state, or a system crash or hang may occur. See Chapter 2, "Controls, Ports, and Indicators," in the Sleep States section.

- Slots 1, 2, 3, and 4 are non-hot-plug; slots 5, 6, 7, and 8 are hot-plug.

NOTE

Refer to Information Assistant on the *HP NetServer Online Documentation CD-ROM* that comes with the HP NetServer for PCI hot-plug (while HP NetServer is powered up) procedures.

- For optimal performance, add PCI boards to slots 4, 5, and 6, which are the fastest slots (33MHz and 32-bit and on the primary bus).

- Consider the boot priority prior to installing accessory boards, but after configuring the HP NetServer.
- Some accessory board outputs may exceed U.S. National Electrical code (NFPA 70) Class 2 or power source limits and must use appropriate interconnecting cabling in accordance with the National Electrical Code. (All Hewlett-Packard boards comply with Class 2.)
- You can configure the NetServer to boot from a PCI-based DAC inserted into a PCI slot. Use the Symbios Configuration Utility to select a different PCI slot when scanning for boot devices. Refer to Chapter 10, "Configuring the HP NetServer."
- Slots 7 and 8 accept universal boards. Universal boards automatically switch to accept power from a +5.0 or +3.3 VDC.

Tools Required

- Torx 15 driver
- Torx 25 driver
- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap with ground lead.

Remote Control Board

The HP Remote Control board supports HP TopTools software and comes installed from the factory in PCI slot 2, due to its boot order (Bus 5) and a required cable connection to the I/O board. The I²C cable for the HP TopTools Remote Control card is inserted into connector J1F1 on the I/O board. For more information on use of the Remote Control board, see "Information Assistant" on the *HP NetServer Online Documentation CD-ROM*.

IRQ Settings

The BIOS automatically assigns the IRQs (hardware interrupts) for each PCI slot and embedded device in the HP NetServer during boot. These assignments trigger the NOS to enable the APIC (Advanced Programmable Interrupt Controller). APIC takes advantage of the expanded set of non-conflicting IRQs for those accessory boards requiring more than one IRQ per slot. APIC provides up to four dedicated interrupts for each PCI slot.

These automatic IRQ assignments can be changed in the setup screen (**F2**).

Boot Priority

Some boards have preferred slot locations. If not, consider the boot order when choosing the accessory board slot in which to install the accessory board.

This is the default boot priority for the LH 3000r and LH 3000:

1. IDE CD-ROM drive with a bootable CD-ROM
2. Flexible disk drive with a bootable flexible disk
3. HP NetRAID controller or integrated Embedded SCSI controller
4. PCI boards in slots in the following order: 8, 7, 6, 5, 4, 3, 2, and 1

You can change this boot order using the Setup utility. Press **[F2]** during the boot process as described in Chapter 10, "Configuring the HP NetServer."

Tested PCI Boards and Drivers

For a list of tested PCI boards, check "Configuration Assistant" on the *HP NetServer Navigator CD-ROM*, or look for the Hardware Tested Products link for the LH 3000r and LH 3000 under NetServer Service and Support for the NOS used at:

<http://www.hp.com/netserver/servsup/compatibility>

For current PCI Hot-Plug information regarding NOS support and the availability of PCI Hot-Plug compliant drivers, search for *pcihotplug* on HP's website at:

http://www.hp.com/netserver/products/LH_3000

Installing Accessory Boards

NOTE

To hot add or hot replace hot-plug accessory boards, refer to "Hot Adding or Replacing Hot-Plug PCI Boards" later in this chapter.

Use this procedure to install accessory boards during the initial installation process and the following:

- PCI Hot-Plug boards when the HP NetServer is not powered up
- All PCI boards in slots 1 through 4 (non-hot plug)

Skip any steps that do not apply to your installation.

1. Read the documentation included with each board and follow any special instructions provided.
2. If necessary, log off all users and gracefully shut down the network operating system according to directions in your NOS documentation.
3. Make sure the HP NetServer is powered off according to the instructions in Chapter 2, "Controls, Ports, and Indicators."
4. Disconnect the power cord and cables, and label each one to support re-assembly.

CAUTION	The power supplies will continue to provide standby current to the NetServer until the power cable is disconnected.
----------------	---

5. For rack-mount and pedestal models, follow the instructions in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the server.
6. Consider the boot priority before installing any accessory boards.

For details, refer to the topic "Boot Priority" earlier in this chapter. If installing a SCSI controller board, the controller's priority (boot order) is set by the board's slot location.
7. Identify the desired slot (P1 through P8) before installing the accessory board. In this example, non-hot-plug Slot 3 is used.

NOTE	Slots are keyed to prevent a +5 volt board from going into a 3.3 volt slot.
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8. Release the front board hold-down and remove it.

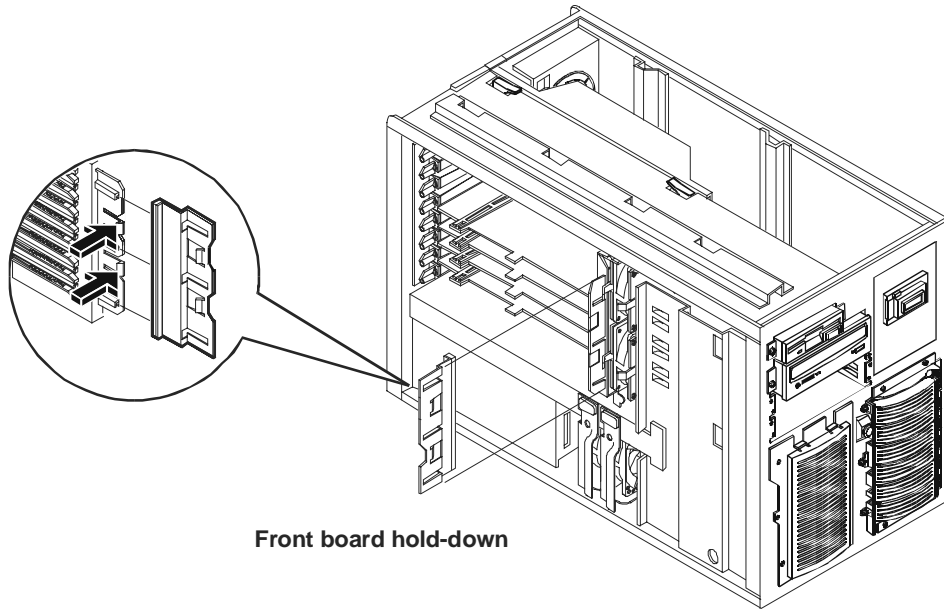


Figure 6-2. Remove Front Board Hold-Down

9. Remove the slot cover from the target slot (number 3 in this example) by rotating the solid latch first and the latch with the small opening second.

NOTE

The PCI non-hot-plug slot covers use a black retainer and a blue locking lever to hold the slot cover and board in place, instead of a screw commonly used on HP NetServers.

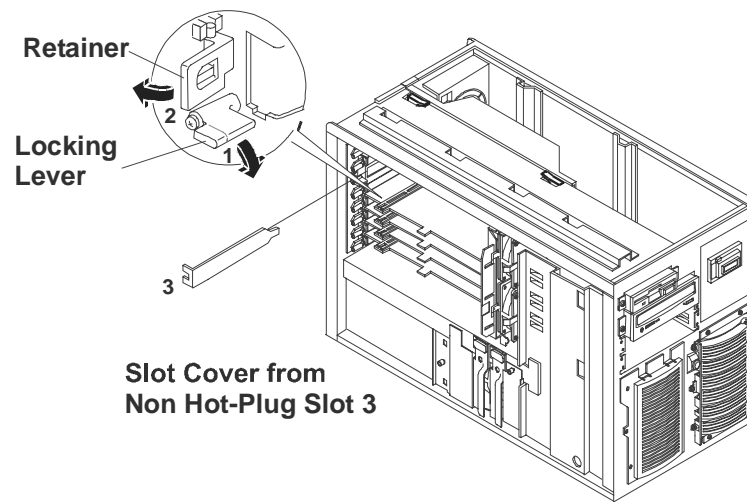


Figure 6-3. Remove the Slot Cover

NOTE	After removing the slot cover, leave the retainer and locking lever open so that you can install the board.
-------------	---

10. Install the PCI non-hot-plug board in the slot, which is number 3 in this example.

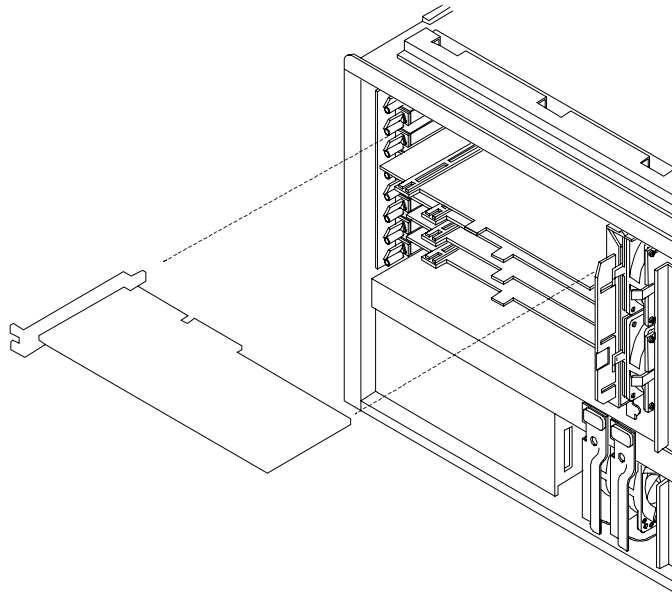


Figure 6-4. Install Non-Hot-Plug Board

11. Align the board with its slot along its full length, and push it into the slot with even pressure along the top edge of the board until it is fully seated in its connector.

NOTE

To prevent EMI problems, ensure each unused PCI slot has a PCI slot cover. If a PCI board is removed and not re-installed, you must install a PCI slot cover.

12. Close the PCI hold-down latch, by reversing the procedure in step 9.

NOTE

Be sure the PCI hold-down latch closes fully (clicks) so that the slot will power on when the HP NetServer boots.

13. If the installed accessory board requires an external connection or a connection to the I/O board, ensure the cable is properly attached.
Refer to the accessory board documentation for connection requirements.
14. Replace the front board hold-down.

15. Follow the procedure in Chapter 3, "Opening and Closing the HP NetServer," for closing up the server.
16. Reconnect power and cables.
17. Power on the HP NetServer according to the respective NOS power-up instructions.

NOTE

All PCI slots (with the PCI hold-down latch closed) power on and all new boards are recognized by the HP NetServer when it reboots, regardless of the presence of a driver or a PCI Hot-Plug Utility.

If the PCI board requires a driver (non-hot-plug-compliant or hot-plug-compliant) that is not loaded during NOS installation, you must load the driver according to the respective NOS's driver installation process before you can use the board. Refer to "Hot Adding or Replacing Hot-Plug PCI Boards" for more hot-plug information.

18. Use the respective NOS to ensure the correct software drivers for the PCI board are loaded and verify correction operation.

NOTE

If the hot-plug compliant driver and the Hot-Plug Utility are not loaded during the configuration process (NOS installation), you will not be able to use the Hot-Plug option until the utility and drivers are loaded. Refer to the respective NOS Hot-Plug Help files to load the Hot-Plug Utility and hot-plug compliant drivers and then initialize the driver(s) if it is not done automatically.

19. Restore the HP NetServer to normal operation.

Removing a Hot-Plug Board

If you want to remove or replace a hot-plug PCI board, go to "Hot Adding or Replacing Hot-Plug PCI Boards" in the following section. To remove a hot-plug board from the HP NetServer which is not running:

1. Make sure power is off and follow the instructions for accessing the I/O board.
2. Pull the brown plastic slot separator out until you feel resistance (about three-eighths of an inch, or 10mm).

This releases the hot-plug board from the connector.

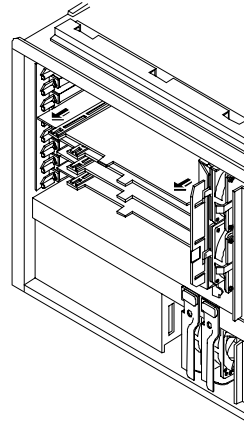


Figure 6-5. Removing a Hot-Plug Board

3. Remove the hot-plug board.
4. Either replace the hot-plug board or reinstall the slot cover.

NOTE

To perform a *hot add*, or a hot-plug board installation when the HP NetServer is powered up, refer to "Information Assistant" on the *HP NetServer Online Documentation CD-ROM*.

Hot Adding or Replacing Hot-Plug PCI Boards

The PCI Hot-Plug option is NOS-dependent. To use the Hot-Plug option, the PCI board must have a hot-plug compliant driver and a Hot-Plug Utility for the respective NOS. The Hot-Plug Utility is used to turn power off/on to the PCI slot, while the HP NetServer continues to operate normally. Refer to the PCI Hot-Plug Replacement procedures in Information Assistant for the NOS you are using.

To view the respective Hot-Plug (NOS) procedures:

1. Make sure that the *HP NetServer Online Documentation CD-ROM* (Information Assistant) is installed on a computer. See Chapter 11 for installation instructions.
2. Select **NetServers L-Series** button.
3. Scroll down to and select **NetServer LH 3000** in the list.
4. Select **Install**.
5. Select **Installing Accessory Boards**.
6. Select the appropriate **Hot-Plug Replacement (NOS)** topic.

Procedures are in this section for:

- ◇ powering the slot off and on with the NOS utility
- ◇ hot removing and hot replacing hot-plug boards

For current PCI Hot-Plug information and PCI Hot-Plug drivers, go to:

<http://www.hp.com/cposupport/>

Select your product and download the latest software. PCI hot-plug drivers are in the SCSI section.

7 Installing Additional Processors

Introduction

The HP NetServer LH 3000/3000r supports two processors in primary and secondary slots. The NetServer ships with one processor and an accompanying VRM in the primary slots. The processor and VRM are on the system board.

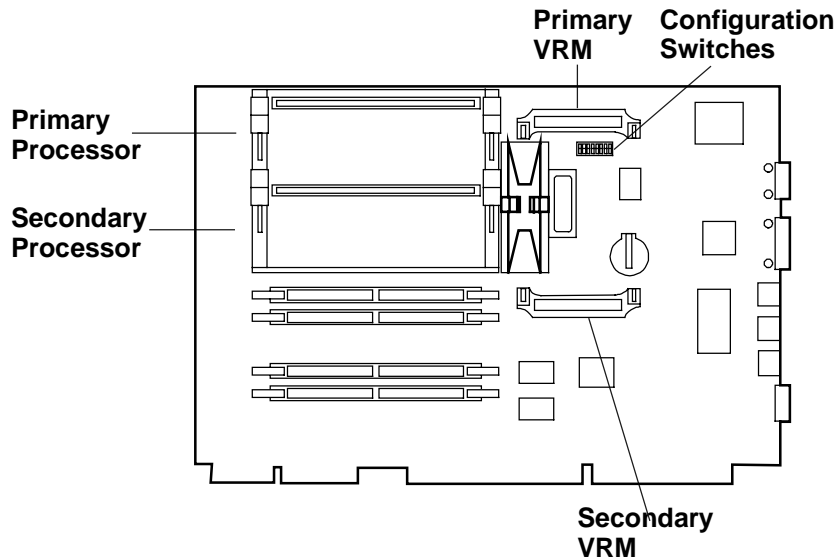


Figure 7-1. System Board

Configuration Guidelines

CAUTION

Do not remove the processor from its bag until you are ready to install it. Make sure the bag remains sealed.

Before you remove a processor from the anti-static container, touch a grounded, unpainted metal surface on the HP NetServer to discharge static electricity.

CAUTION	Do not change the processor speed switches as this can result in unreliable or intermittent performance, and data integrity may also be at risk.
----------------	--

- Use only processor upgrade kits with the same HP product number. This ensures the processor type, clock speed, and cache size match, and that processor steppings are compatible.
- Be sure that the VRM and the processor module associated with it are both in either the primary or the secondary pair of slots.

Tools Required

- Torx 15 driver
- Torx 25 driver
- An anti-static service kit (3M 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap

Installing the Processor

CAUTION	Use an anti-static wrist strap and a grounding mat. Wear a wrist-strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure the metal of the wrist strap contacts your skin.
----------------	--

The installation procedure is the same for the rack-mounted as for the pedestal HP NetServer once you gain access to the system board assembly.

1. Unpack the processor shipping box and check the contents against its packing list.

CAUTION	Do not remove the processor from its bag until you are ready to install it. Make sure the bag remains sealed.
----------------	---

2. If you are installing a processor in a new HP NetServer, skip to step 4; otherwise, shut down the network operating system according to directions in your NOS documentation and power down the HP NetServer according to the instructions in Chapter 2, "Controls, Ports, and Indicators."
3. Disconnect the power cord and cables and, if necessary, label each one to support re-assembly.

WARNING	Power supplies will continue to provide standby current to the NetServer until the power cables are disconnected.
----------------	---

4. To gain access to the system board assembly, follow instructions in Chapter 3, "Opening and Closing the HP NetServer."

NOTE	In the LH 3000r, this assembly is under the Cover 2 on the right ; in the LH 3000, it is under the top cover.
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5. Raise the blue retaining latches to disengage the board.
6. Pull the system board assembly out until it clears the chassis.

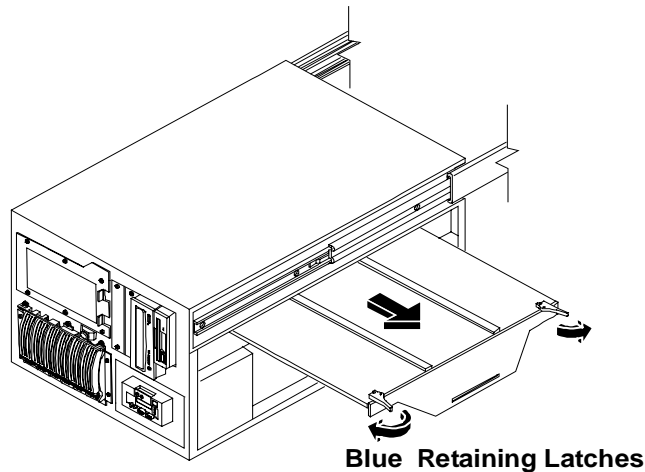


Figure 7-2. Removing the System Board Assembly from the Rack-mount HP NetServer

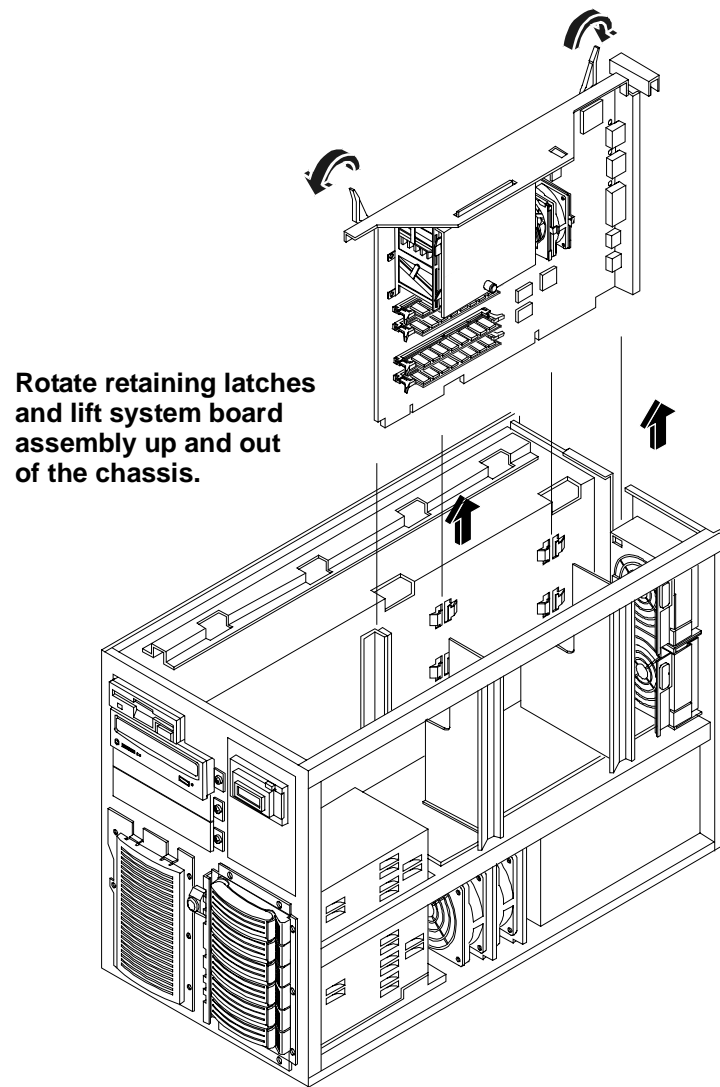


Figure 7-3. Removing the System Board Assembly from the Pedestal NetServer

7. Slide the system board assembly from the chassis and place it metal plate side down on an anti-static pad.
8. Remove the processor cage cover by releasing the thumbscrew. Set the cover aside.

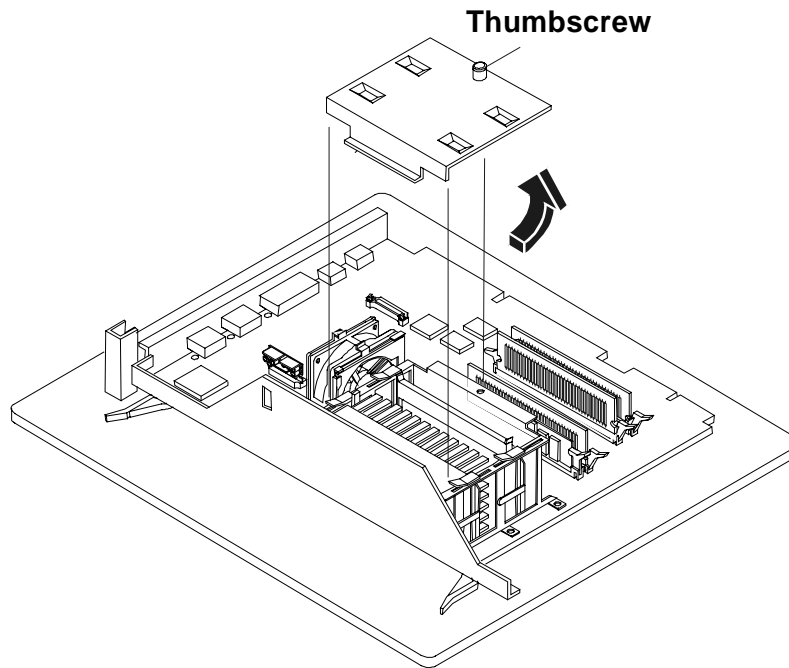


Figure 7-4. Remove Processor Cage Cover

9. Slide the blue plastic release levers forward to free the terminator.
10. Hold the terminator by its edges and lift straight up to remove it.
11. Save the terminator for future use.

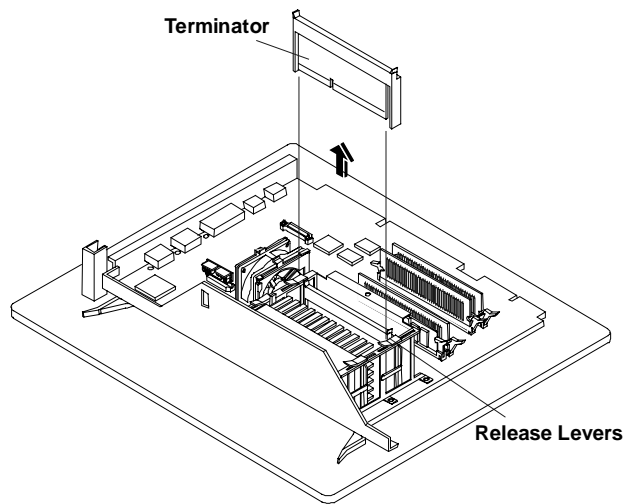


Figure 7-5. Remove the Terminator

12. Remove the processor from the sealed bag.

13. Align the additional processor over the secondary slot so that the heat sink faces towards the center of the enclosure like the processor already installed.

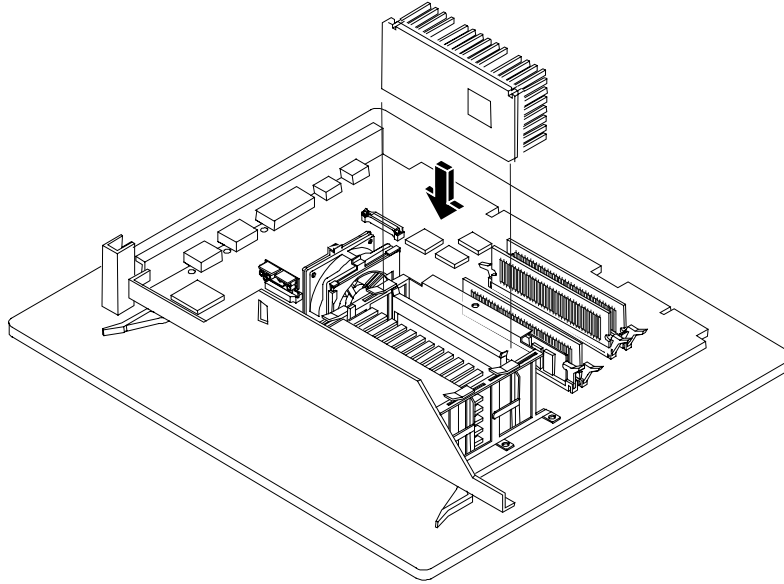


Figure 7-6. Install Processor

14. Gently push down on the additional processor until the blue latches return to their closed position.
15. Align the VRM card with the secondary VRM slot. Note that the component side should face away from the VRM already installed.

CAUTION	Hold the VRM by its edges to avoid touching the components as you push the VRM card down into the slot.
----------------	---

16. Holding the VRM by its edges, insert it into the socket.

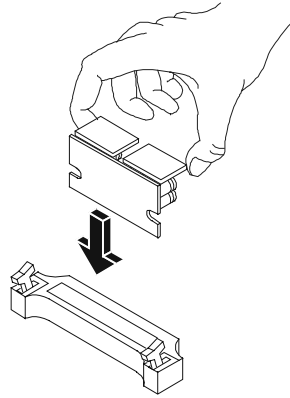


Figure 7-7. Handle VRM by Edges

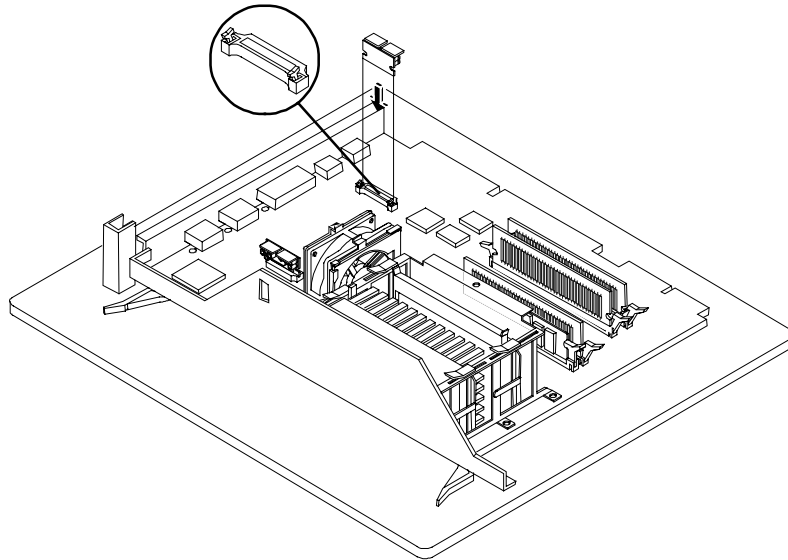


Figure 7-8. Insert the VRM

17. Processor speed switches are set for the processor speed that ships with your system.

NOTE Only the first four switches set the processor speed.

After installing processors, verify that the configuration switches are set correctly. If the switches are not correct, set them accordingly.

To set the configuration switches:

18. Locate the configuration switches on the system board.
19. Look up the appropriate switch settings for the processors installed in the HP NetServer.

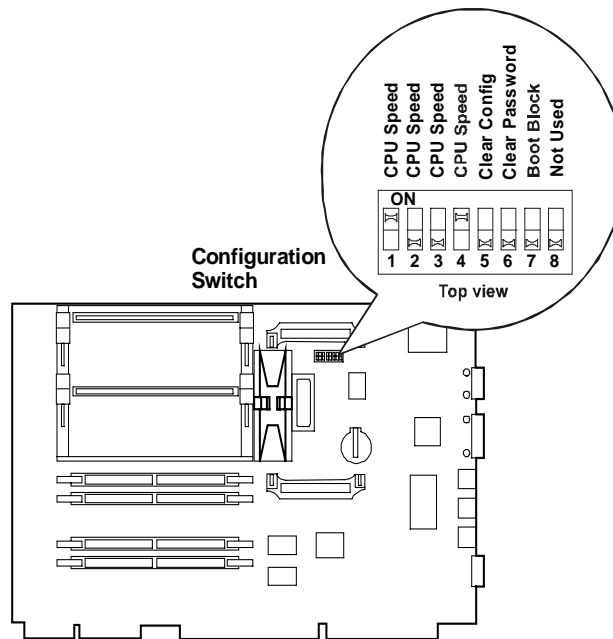


Figure 7-9. Configuration Switch and Settings

20. Use a small, flat-blade screwdriver or similar tool to change the switches.

Table 7-1. Configuration Switch Settings

Configuration Switches – CPU Speed				
Speed	Switch 1	Switch 2	Switch 3	Switch 4
266 MHz	ON	ON	ON	ON
333 MHz	ON	ON	ON	OFF
400 MHz	ON	ON	OFF	ON
466 MHz	ON	ON	OFF	OFF
533 MHz	ON	OFF	ON	ON
600 MHz	ON	OFF	ON	OFF
666 MHz	ON	OFF	OFF	ON
733 MHz	ON	OFF	OFF	OFF

Configuration Switches S5-S8		
Switch	Function	To Enable
Switch 5	Clear Configuration	ON (normally OFF)
Switch 6	Clear Password	ON (normally OFF)
Switch 7	Boot Block	ON (normally OFF)
Switch 8	Not Used	N/A

NOTE

Some processor speeds listed in Table 7-1 may not be supported. For the latest support information, visit the HP web site:

<http://www.hp.com/go/netserver>

21. Replace the processor cage cover.

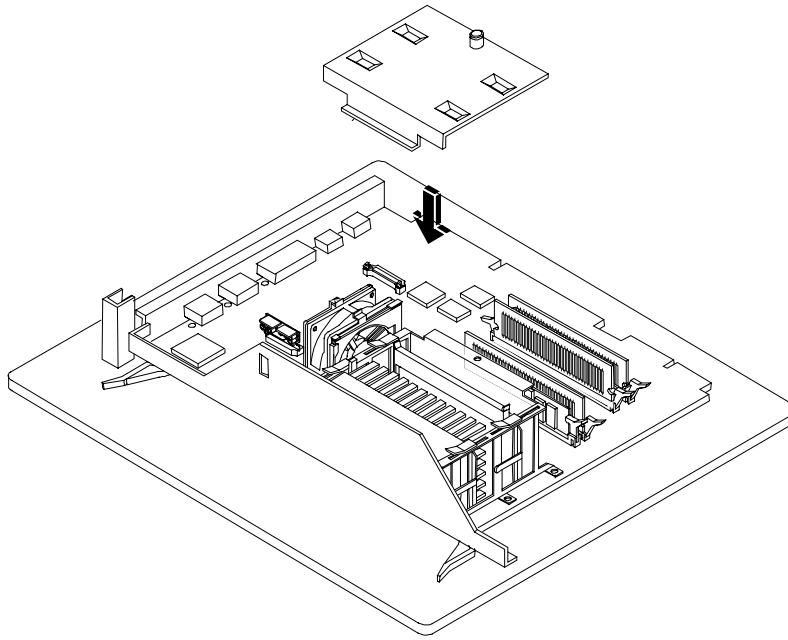


Figure 7-10. Replace Processor Cage Cover

22. If you removed the system board assembly, re-install the assembly now.

CAUTION

Processor modules are designed to operate at their stated speed. Do not set the configuration switches to a different speed. Setting the processor speed to another speed may result in unreliable or intermittent performance. Data integrity may also be placed at risk if processors are operated at speeds other than that specified on the module.

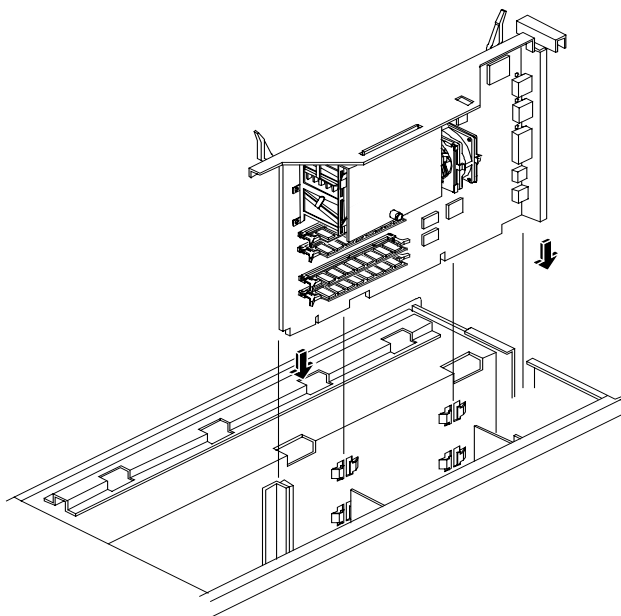


Figure 7-11. Install the System Board Assembly

CAUTION

Do not operate the HP NetServer without first installing all covers and the front bezel. Operating the system without all covers in place reduces critical cooling airflow over some components, such as hard disk drives and processors. Operating the system without all covers in place may result in failure of these components.

23. Replace the covers and bezel on the chassis (see Chapter 3, "Opening and Closing the NetServer").
24. Reconnect the power cords and cables.
25. Return the NetServer to normal operation.

NOTE

HP recommends using the *HP NetServer Navigator CD-ROM* that comes with the processor upgrade kit to ensure you have the latest drivers and information.

Upgrading the Firmware

Load the *HP NetServer Navigator CD-ROM*. It will advise you if the BIOS version on the CD is newer than the BIOS on the HP NetServer and ask you if you want to update the BIOS. Choose **Continue**, and then **NetServer Utilities** to update the BIOS if necessary.

Testing the Processor

After you power on the NetServer, check boot messages to see whether or not the system detects the additional processor. If boot messages indicate that the additional processor has not been found, make sure the processor re-test function in the Setup Utility is set to enabled.

If the boot messages still fail to report two processors, reinstall the NOS.

Re-installing the NOS

You may have to re-install your Network Operating System in order to use the additional processor. If you have gone from an uni-processor to multi-processor configuration, check your NOS documentation or the Readme First file and Configuration Advisor utilities on the *HP NetServer Navigator CD-ROM*.

This completes the installation of the additional processor and VRM.

Removing a Processor Module

Use the same procedure as above, and simply remove rather than add. BE SURE to remove the associated VRM and replace the terminator.

8 Installing the HP NetServer in the HP Rack System/E or Rack System/U

Introduction

This chapter describes how to mount the HP NetServer in an HP System/E or /U rack. If you have an older HP System rack, see Chapter 13, "Alternative Rack Mounting," for instructions. (If you are mounting the HP NetServer in a non-HP rack, refer to the separate rack-mounting guide for third-party racks. It is packed in the accessories tray in the HP NetServer's shipping box.)

HP NetServer and Rack Components

The HP NetServer LH 3000r requires eight EIA units of space.

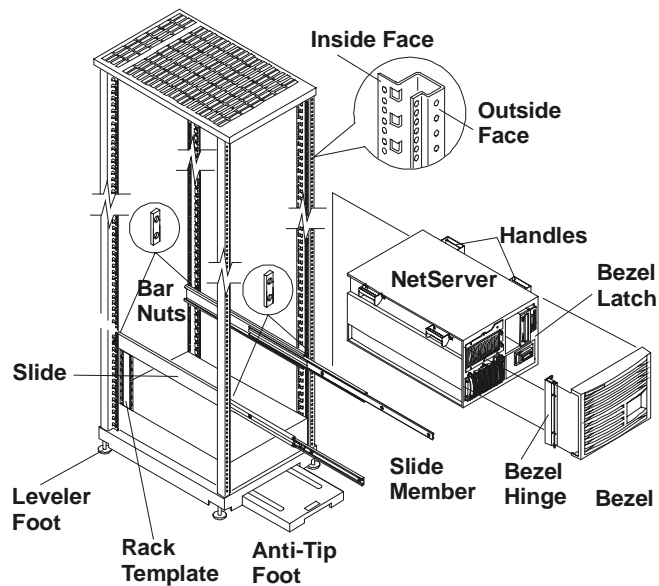


Figure 8-1. Installation Hardware

NOTE

The pedestal HP NetServer LH 3000 cannot be rack-installed without a conversion kit. Contact your HP reseller for information about the HP NetServer LH 3000 to LH 3000r Conversion Kit.

Tools Required

The following tools are required to mount the HP NetServer in the rack:

- Torx 15 driver
- Torx 25 driver
- HP NetServer LH 3000r Rack Template
- Tape or a marker pen to mark mounting locations

Rack-mounting Guidelines and Precautions

Observe the following guidelines and safety precautions during the rack-mount installation.

- Extend the rack's anti-tip foot (see Figure 8-2) prior to any work on the rack to prevent rack tip-over, equipment damage, and injury.

WARNING

Lower the leveler feet at the four corners of the rack to improve stability and prevent the rack from rolling away as devices are inserted into their rack mounts. Failure to use the anti-tip foot and leveler feet could result in serious injury.

- Uneven mechanical loading within the rack can cause hazardous conditions. Plan the placement of equipment in the rack to ensure balanced loading.

CAUTION

If other rack components are to be mounted in the rack below the HP NetServer, install those components before starting to mount the NetServer.

- ◇ Install components from the bottom up.
- ◇ Place the heaviest components on the bottom of the rack.

- ◇ Use HP Rack Assistant to plan the rack configuration and to check power, weight, and stability of the configured rack. Download HP Rack Assistant from:

<http://netserver.hp.com/netserver/support/>

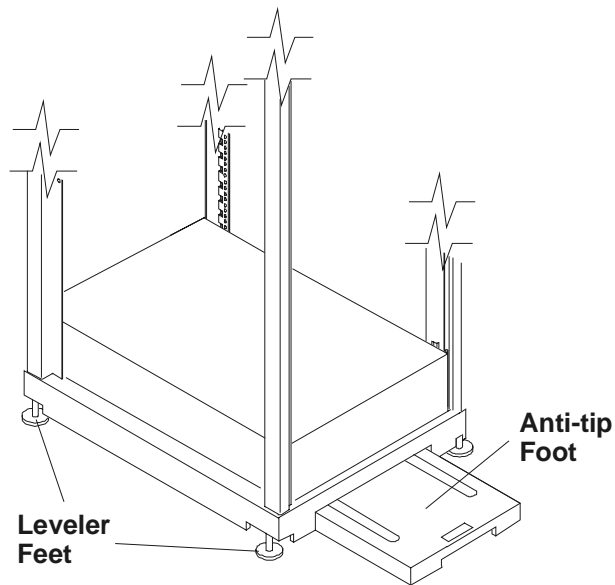


Figure 8-2. Anti-tip Foot and Leveler Feet

- Install components such as DIMMs and processors into the system board assembly before rack-mounting the NetServer.
- Remove power supplies and hard drives before lifting the HP NetServer.

Always keep the following safety and environmental issues in mind, especially if you install the HP NetServer in a non-HP rack environment:

- **Maximum Recommended Ambient Temperature** - The maximum recommended ambient temperature of the room is 35°C (95°F).
- **Elevated Operating Ambient Temperature** - The ambient operating temperature within a closed or multi-unit rack assembly may exceed the room's ambient temperature. Ensure the temperature within the rack itself does not exceed 35°C (95°F).

- **Reduced Air Flow** - As you mount equipment in the rack, make sure that you allow enough air flow for safe operation of the equipment. Observe the minimum clearance dimensions listed in Appendix A, "Specifications."
- **Circuit Overloading** - Make sure that the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** - Maintain reliable earth grounding of rack-mounted equipment. Give particular attention to supply connections that are not direct connections to the branch circuit: for example, the use of power strips.

HP Rack System/E and /U Characteristics

The illustration below shows the characteristics of the HP Rack System /E and /U racks.

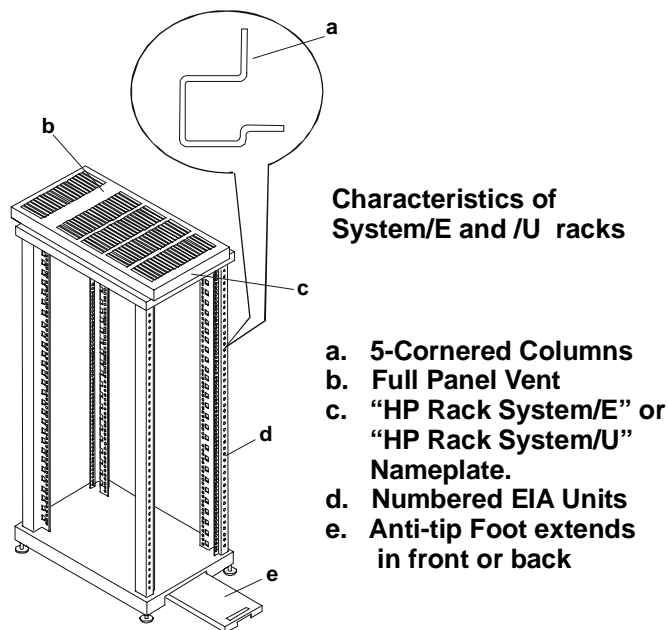


Figure 8-3. HP System/E and System/U Rack Characteristics

HP NetServer Rack Mount Parts List

Make sure that the rack-mount kit that accompanies the HP NetServer contains the following parts:

Table 8-1. Parts for Rack Mount Kit

Quantity	Description
2	Slides
8	Rack Nuts
8	Rack Nut Screws (M5 x 16mm)
6	Screws for Slides (8-32 x ¼ inch)
1	Template

Rack-Mounting the HP NetServer

Install the slides, which hold the HP NetServer in the rack. Do this by first marking a baseline based on where you want the HP NetServer in the rack.

Marking Column Baseline and Slide Mounting Holes

To determine the hole position for rack nuts and bar nuts, which will secure the slides to the rack, mark the slide mounting holes on all columns.

1. Use tape or a marker to mark where you want the bottom of the HP NetServer to be in the rack. Mark at an EIA unit mark on a column. This starts your baseline.

NOTE	The EIA unit marks are stamped in the sheet metal of the columns. Use the rack template to mark the correct holes for mounting (on all four columns).
-------------	---

2. Hold the bottom of the rack template at the baseline.
3. Mark the top of HP NetServer (eight EIA units up from the baseline).
4. Mark the slide screw mounting holes (holes 20 and 22 up from the baseline).
5. Mark the remaining columns by repeating steps 1 through 4. This completes the marking of the baseline.

Installing Bezel Rack Nuts

Facing the front of the rack:

1. Install the bezel-latch rack nuts on the right front column (holes 11 and 15 up from the baseline).
2. Install the bezel-hinge rack nuts on the left front column (holes 6 and 19 up from the baseline).

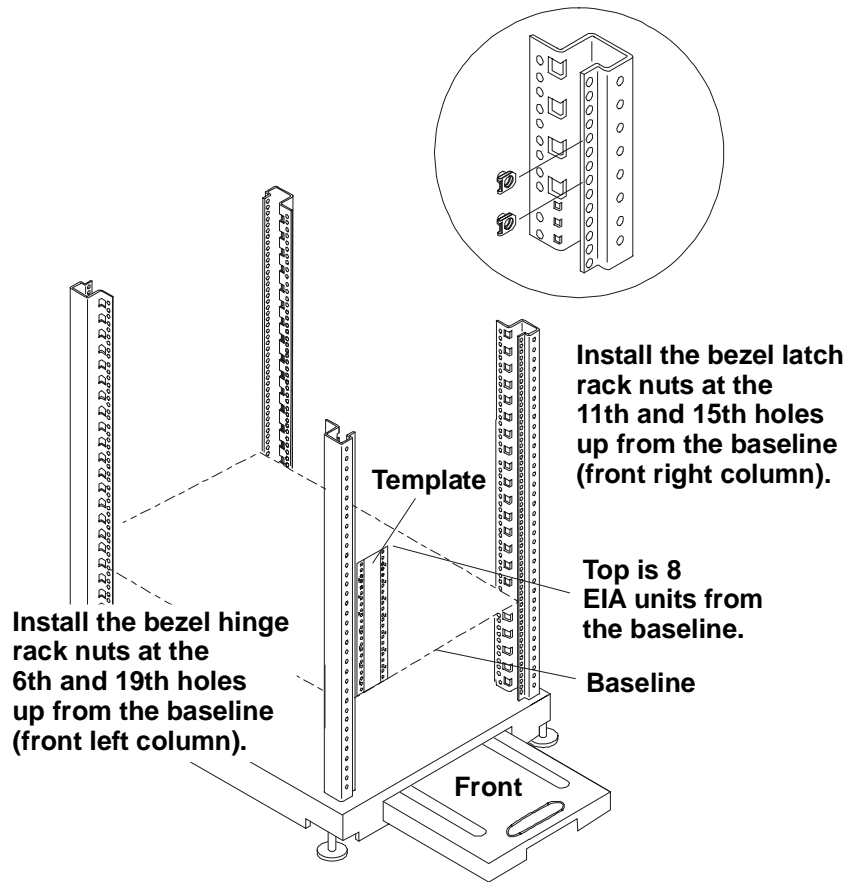


Figure 8-4. Marking the Columns for Rack Nuts

Installing Bar Nuts

The "bar nut" is a two-hole metal bar used to secure the mounting flanges of the slide to the rack columns.

All four mounting brackets on the slides attach behind the outside faces of the columns using bar nuts. Use the template (or if you no longer have it, count) and mark the twentieth and twenty-second holes up from the baseline on each column. These holes correspond to the bottom hole of the eighth EIA unit (and the middle hole of the seventh EIA unit) above the baseline.

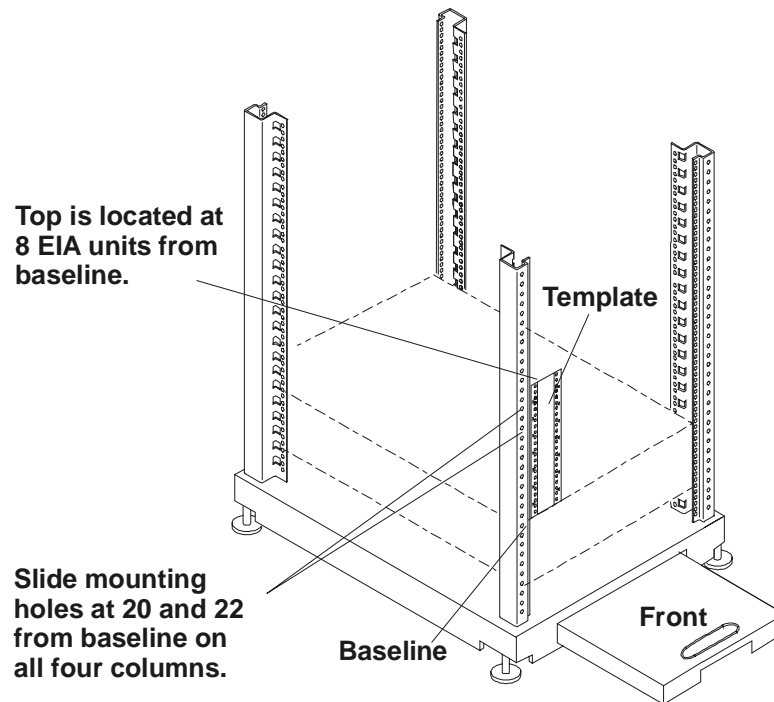


Figure 8-5. Marking the Rack Columns for Bar Nuts

The bar nut is placed behind the outside face of the column, at the height determined with the template, or by counting.

1. Insert two screws through the marked holes on the front columns.
2. Start (but do not tighten) two screws through the face of the bar nut. Install the bar nuts on all four rack columns.

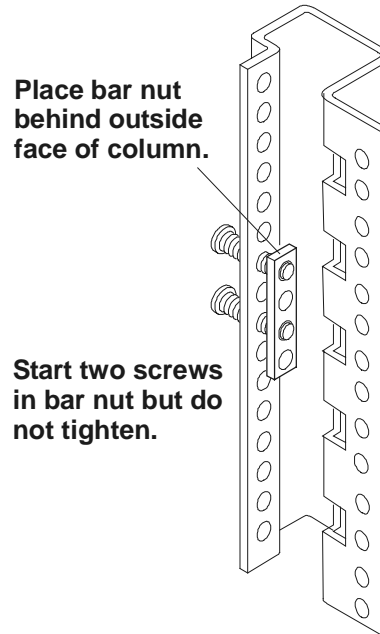


Figure 8-6. Attach Bar Nuts

The slots in the mounting flange allow you to insert the flange in place behind the outside face but in front of the bar nut.

The mounting flanges are then positioned behind the column face, but in front of the bar nuts.

Attaching the Slides

The slides have mounting flanges at each end (see Figure 8-7). The mounting flange is inserted between the column and the bar nut.

The slots in the mounting flange allow you to insert the flange in place behind the outside face but in front of the bar nut.

The mounting flanges are then positioned behind the column face, but in front of the bar nuts.

**Insert the Mounting
Flanges between
each Column bar nut
and tighten the
screws.**

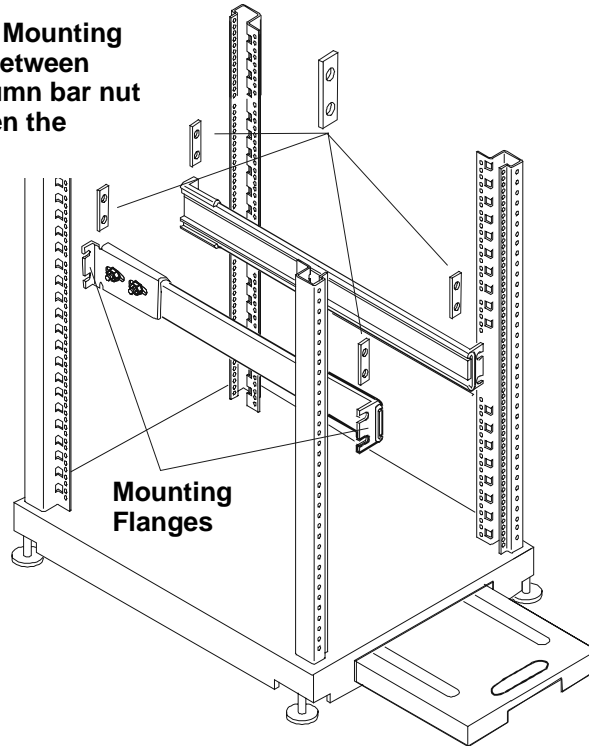


Figure 8-7. Positioning the Slides

1. Hold the slide so the slide members can extend out the front of the rack.
2. Insert the slide front and rear mounting flanges between the column and bar nuts. Press the slide firmly against each rack column.

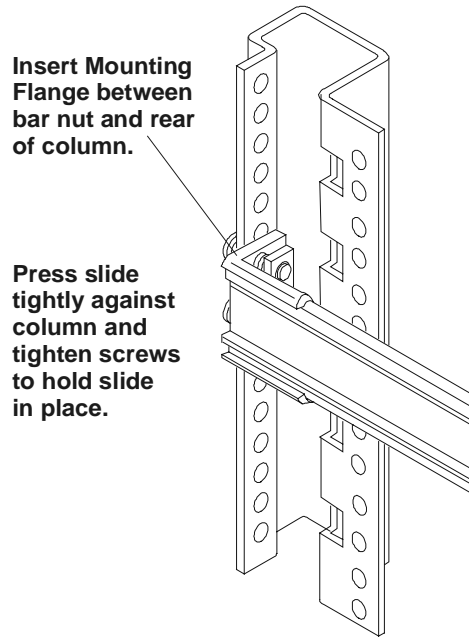


Figure 8-8. Securing Slide to the Rack Column

3. Tighten both screws into the mounting flanges of each end of each slide.
4. Tighten both nuts on each slide rail to prevent the slide from slipping positions.

Installing the HP NetServer

The following steps require lifting the HP NetServer with the mounting handles, placing it in front of the slide members, and sliding the slide members underneath the handles to secure it to the slides installed in the rack.

WARNING

Extend the anti-tip foot from the front of the rack and lower all leveler feet to stabilize the rack before mounting rack components. Failure to use the anti-tip foot and leveler feet could result in serious injury.

1. Lower the four rack leveler feet to the floor, lifting the rack off the rack wheels (see Figure 8-9).
2. Fully extend the anti-tip foot from the front of the rack.

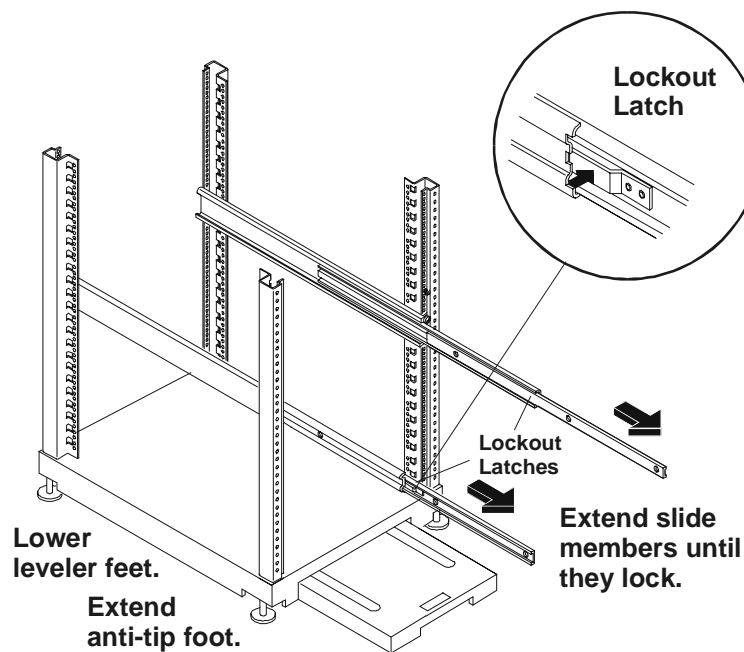


Figure 8-9. Preparing the Rack for HP NetServer Installation

3. Extend the slides until you hear a click, indicating they are locked. Note that slides do not come apart.

NOTE The slide members cannot be removed.

4. Remove power supplies and hard disk drives from the server to reduce the total weight to be lifted.

WARNING	Two people are required to move or lift the NetServer. The HP NetServer LH 3000r weighs up to 176 pounds (80 kg.) when fully loaded.
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5. Lift the HP NetServer by the handles until the handles are above the extended slide members (see Figure 8-10).
6. Move the HP NetServer toward the rack, between the slide members, until all four HP NetServer handles are over the slide members.

CAUTION	The HP NetServer must be moved horizontally onto the extended slides. You cannot lower it onto the slides.
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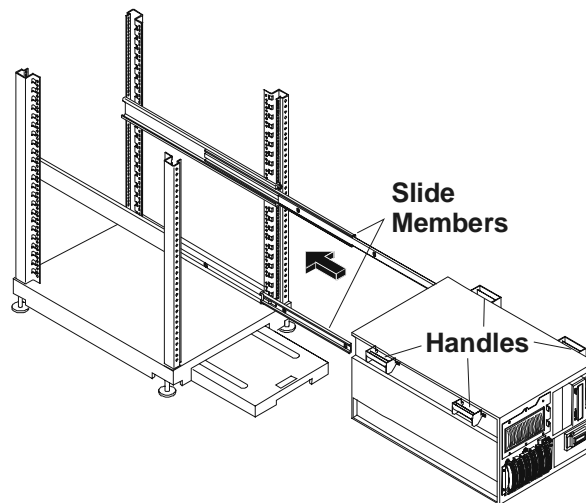


Figure 8-10. Mounting the HP NetServer on the Slides

7. Reset the HP NetServer handles on the slides and then line up the mounting holes in the HP NetServer chassis with the screw holes in the slides (see Figure 8-11).

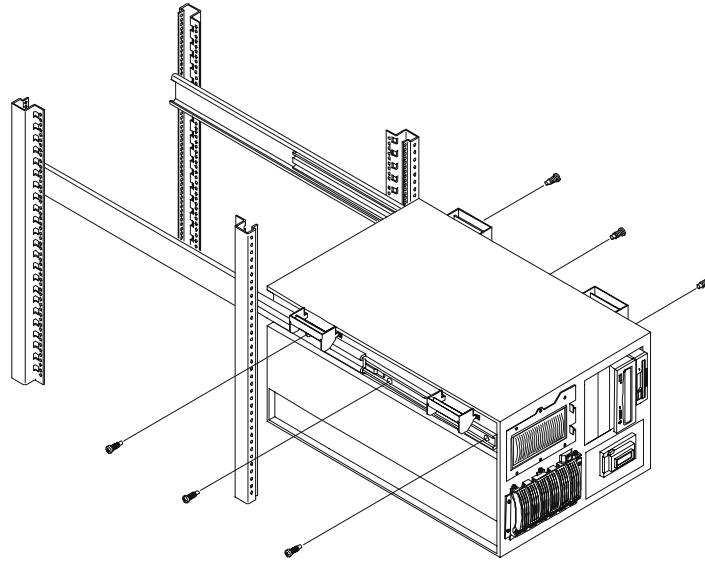


Figure 8-11. Securing the HP NetServer to the Slides

8. Insert three screws through each slide member into the HP NetServer. Tighten all screws securely.
9. Remove the two screws from each handle and remove.

WARNING	Save the handles and screws for future removal and reshipping of the NetServer.
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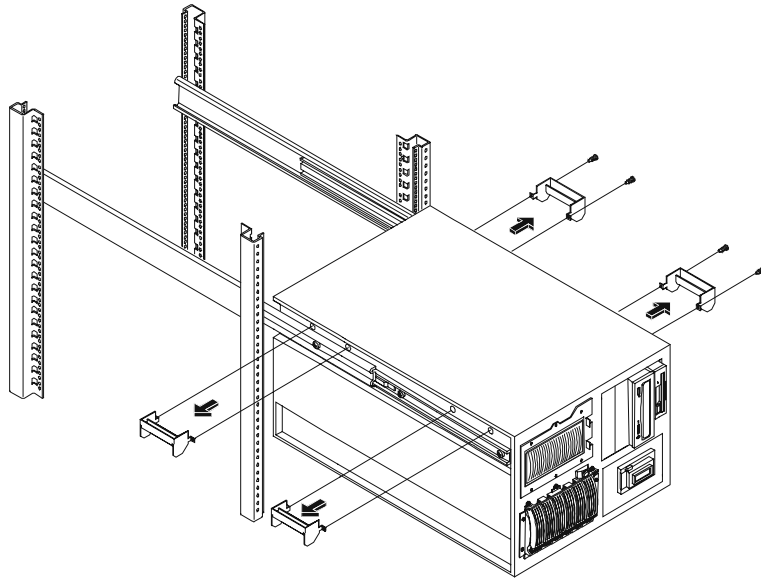


Figure 8-12. Removing Mounting Handles

Securing the HP NetServer to the Rack

Complete the following steps to secure the HP NetServer to the rack and install the front bezel.

1. Attach the bezel hinge to the HP NetServer with three screws through the right edge of the bezel hinge and into the left front of the HP NetServer (see Figure 8-13).
2. Attach the bezel latch to the right side of the HP NetServer with two screws.
3. Depress the slide lockout latches, and push the HP NetServer completely into the rack (see Figure 8-13).

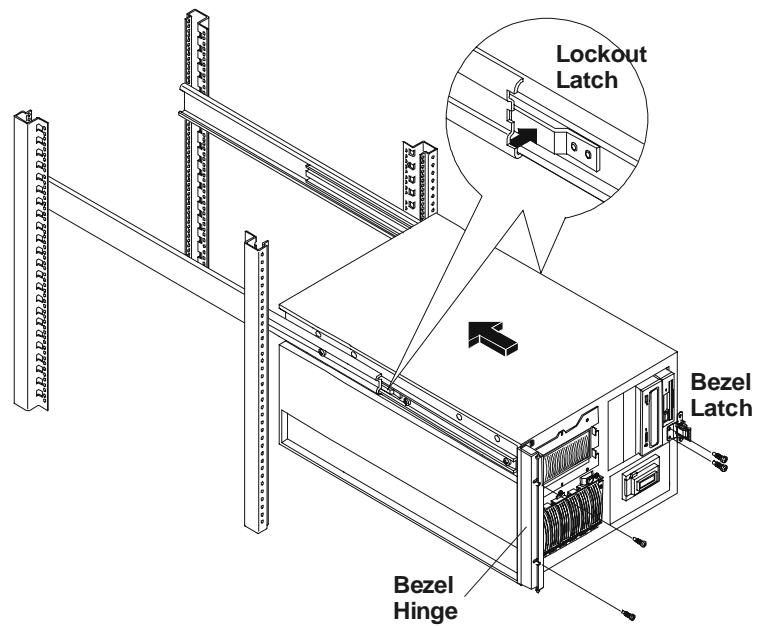


Figure 8-13. Slide Lockout Releases, Bezel Latch, and Bezel Hinge

4. Install two screws through the bezel hinge into the rack nuts on the left column.
5. Install two screws through the bezel latch into the rack nuts on the right column (see Figure 8-14).

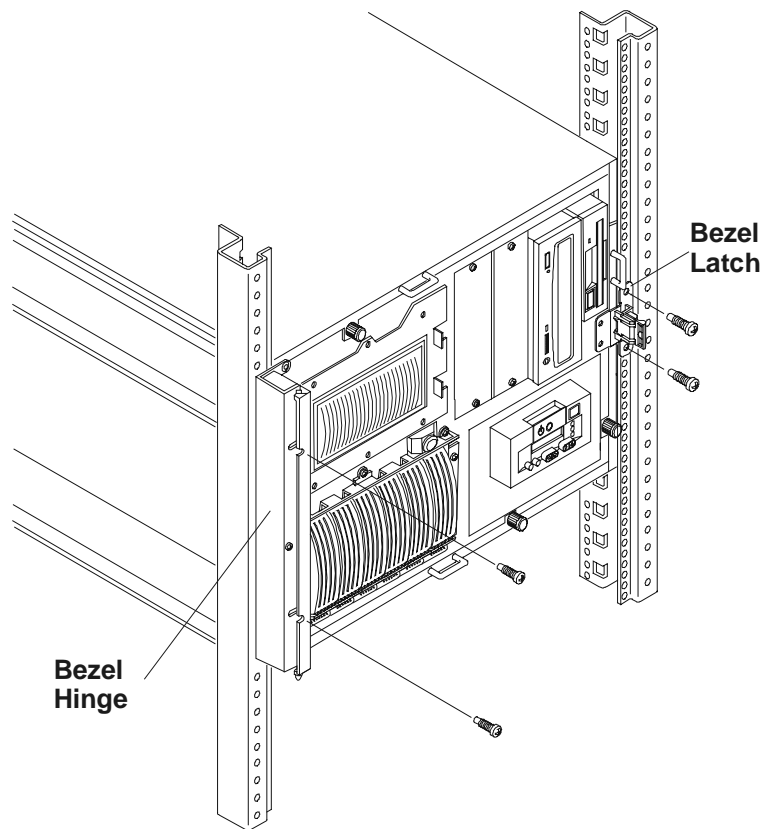


Figure 8-14. Securing the HP NetServer to the Rack

6. Snap the bezel on the bezel hinge and close the bezel on the bezel latch. The bezel swings open to access the HP NetServer internal mass storage cage (see Figure 8-15).

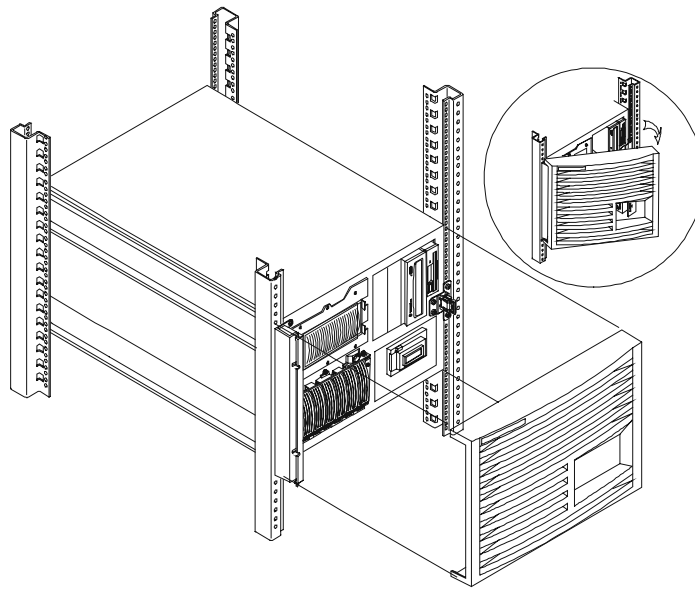


Figure 8-15. Installing the Bezel

7. Slide the anti-tip foot into the rack.
8. Return to the *HP Rack Installation Road Map* to complete the rack installation.

Attaching the Cable Management Arm

The Cable Management Arm for the HP NetServer LH 3000r can only be mounted on HP Systems racks. The HP NetServer Cable Management Arm allows the cables, including the power cord, to move in and out with the HP NetServer chassis on its slides without being accidentally disconnected. See Figure 8-16.

WARNING

Before sliding out the HP NetServer, ensure the anti-tip foot is still extended from the front of the rack. A tip-over hazard exists, so never slide more than one component out of the rack at a time.

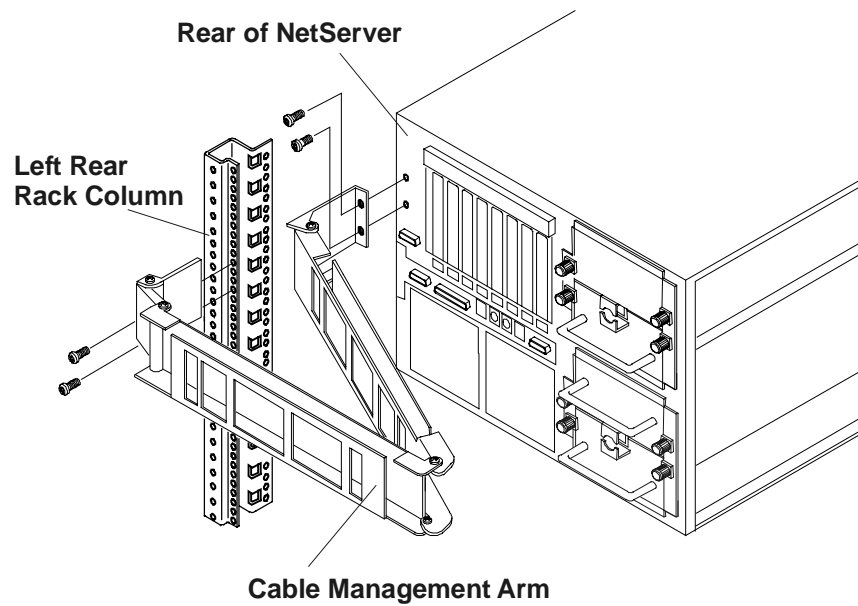


Figure 8-16. Attaching the Cable Management Arm

1. Ensure the HP NetServer is pushed all the way into the rack.
2. At the rear of the NetServer, place rack nuts on the left column in the 17th and 18th holes above the baseline of the HP NetServer. See Figure 8-16.
3. Install the two 6-32 pan head Torx 15 screws in the two threaded holes on the rear of the NetServer.
4. Orient the cable management arm as shown in Figure 8-16.
5. Install the flange over the 6-32 screws and tighten them.
6. Attach the other flange of the cable arm to the rear column of the rack with the two M-5 pan head Torx 25 screws, included with the arm.
7. Extend the HP NetServer out of the rack to ensure the Cable Management Arm moves with the chassis without binding.
8. Slide the HP NetServer back into the rack.
9. At the front of the rack, insert the screws through the flanges into the rack nuts and secure the HP NetServer to the front rack columns with a Torx 25 driver.

Each of the HP NetServer's two front flanges has two slots, which should line up with the rack nuts previously mounted on the rack columns.

10. Plug the HP NetServer's power cable and all available data cables into the back of the HP NetServer.

Refer to the *HP NetServer LH 3000r Rack Cabling Reference Guide* for information about cable dressing and routing.

Attaching the Z-bracket for Shipping

Should it be necessary to ship the system with the HP NetServer in place within the rack, the Z-bracket should be attached to secure the HP NetServer to the rack while shipping.

1. Attach the Z-brackets to the rear columns with two Torx screws, using the Torx T-25 driver. Fasten the bracket to the HP NetServer with two Torx screws (see Figure 8-18).
2. Secure the cable management arm to the right side rack column using the cable tie provided in the Z-bracket kit.
3. Use the original packaging, saved during installation, for packing and shipping.

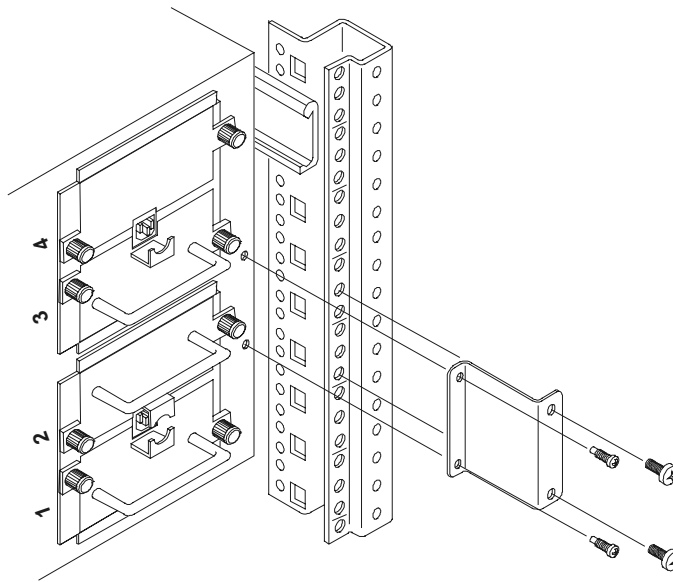


Figure 8-17. Attaching the Z-bracket to the HP NetServer and Rear Column

9 Connecting Monitor, Keyboard, Mouse, and Power Supplies

Connect the monitor, keyboard, and mouse cables to the appropriate connectors on the rear of the chassis.

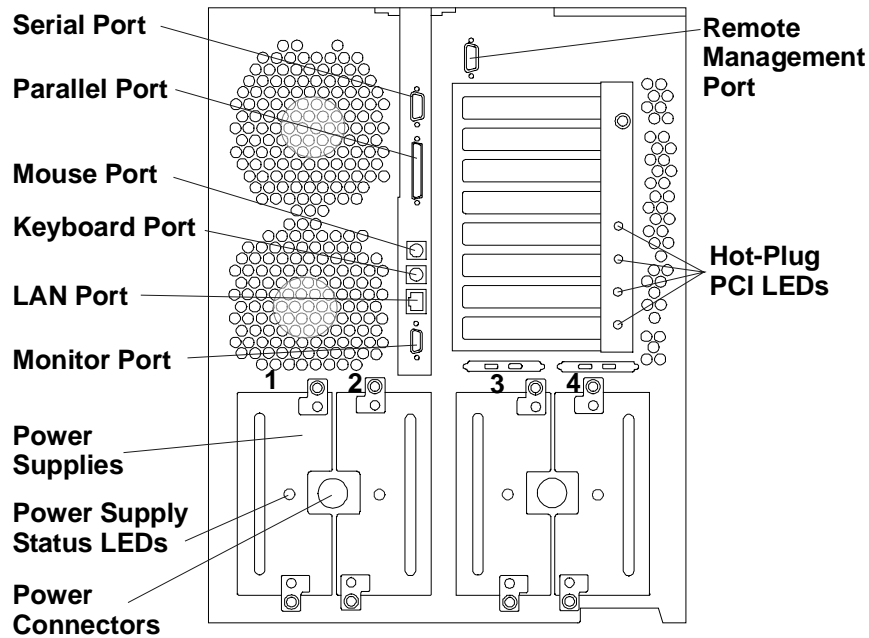


Figure 9-1. Rear View of LH 3000/LH 3000r

Power Supplies

You can install the third power supply in slot three or four.

If you have an uninterruptible power supply (UPS), refer to the instructions supplied with it.

NOTE

If you have installed your HP NetServer LH 3000r into a rack, refer to the *HP NetServer LH 3000r Rack Cabling Reference Guide* for instructions on how to cable the NetServer to external connections.

The HP NetServer performs a diagnostic test when it is connected to an external power source, and then performs another test when the power switch is turned on. If an error condition occurs, note any error code appearing on the front panel and check it in the Error Code listing in "Information Assistant" on the *HP NetServer Online Documentation CD-ROM*.

10 Configuring the HP NetServer

Introduction

This chapter describes configuring the HP NetServer:

- Configure mass storage as either:
 - ◊ NetRAID (default)
 - ◊ LVD SCSI
- Updating the BIOS
- Selecting a language (for example, French)
- Installing the Network Operating System (NOS)

NOTE	The HP NetServer ships with NetRAID as the default. If you plan to configure mass storage as LVD SCSI, change the default using the Setup Utility prior to installing the NOS.
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HP NetServer Navigator CD-ROM

Use the *HP NetServer Navigator CD-ROM* (Navigator) to perform configuration tasks and view system information. For example, you can print a copy of this installation guide for your network operating system.

- Boot the NetServer with the *Navigator CD-ROM* to perform the configuration tasks.
- Run Navigator on any PC or workstation before powering up the HP NetServer to make diskettes to use to configure the HP NetServer later.

Using a Separate Workstation to View Navigator Information

You can run Navigator from a PC or workstation. You can then view many of the administration functions and create diskettes containing necessary tools and drivers. From your desktop or laptop:

1. Insert the *Navigator CD-ROM* in the CD drive.

If the autorun feature is on, your *Navigator CD-ROM* program will run automatically. If the autorun feature is turned off on your computer, do this:

- a. Access the CD-ROM with your NOS.
 - b. Run launch32.exe.
2. Choose the HP NetServer you are installing.
 3. Choose the NOS of the server you are configuring.
 4. Review "What's New on the CD." You can save to a flexible diskette and print information for later reference. For example, you can create a disk containing the HP NetRAID-3si firmware update.

Once you have all the diskettes to configure the HP NetServer, you can begin the configuration on the HP NetServer you are installing.

Use Navigator to get Configuration Information

You can find up-to-date configuration information on Navigator, both in the Readme File and in Configuration Assistant. Use these sources to learn about applicable compatibility issues and get the latest list of HP-tested peripherals and accessories (see the Test Products List in Configuration Advisor).

NOTE

If this is the first time you are using Navigator, you are prompted to set the language, time, and date. Then the Main Menu appears.

Getting the Latest Software and Drivers

Check the release history and status to make sure you have the most recent firmware upgrades and software drivers for the NetServer.

Release History

To ensure that you have the latest versions of the HP NetServer Navigator software, obtain the current *HP NetServer Navigator CD-ROM* Release History. The Release History is updated for each new release of the CD-ROM.

The Release History briefly describes the following for each release:

- Major changes to the HP Navigator CD-ROM that were made for that release
- Version number

- Release date
- Part number of the HP Navigator CD-ROM
- Document Number

Status Report

The Status Report for your specific *Navigator* CD-ROM version describes in detail any software updates between the version and the previous version.

To obtain a Release History or a Status Report, go to one of these sites:

- **`http://netserver.hp.com/netserver/`**

or

- **`ftp://ftp.hp.com/pub/servers`**

For a release history, use document number 6005. For a status report, use the four-digit Document Number printed on the CD, for example, 7754.

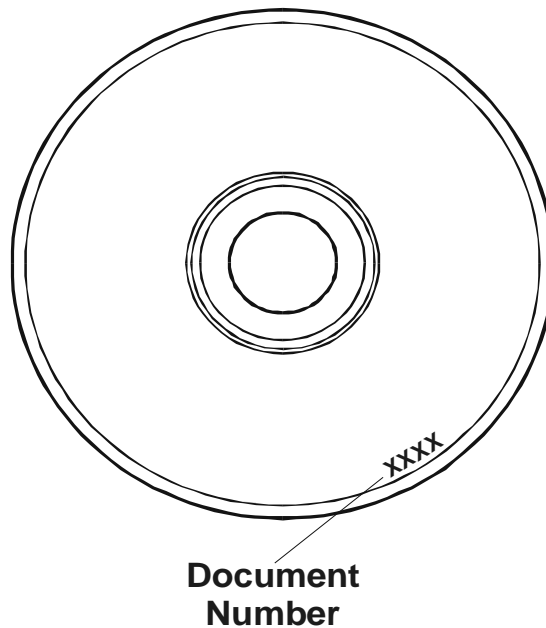


Figure 10-1. Location of Document Number on the Navigator CD

Check the Readme File First

This file includes the most recent information that was not included in the printed installation documentation. Follow these steps to view the file.

1. Press the power-on button.
2. Press the CD-ROM drive eject button.
3. Place the Navigator CD-ROM in the drive, and press the eject button again to close the drive.

NOTE

Using the low profile CD-ROM drive is slightly different than full-height units. The disk drawer will spring out only part way when you push the eject button. You must manually pull the drawer open and manually close it after inserting a CD-ROM.

4. If the system fails to boot, follow the diagnostic instructions on the screen.
5. Go to the HP Navigator Main Menu.
6. If the language needs to be changed, select **User Preferences** and the language you want.

You can also change the language of the BIOS, but this is only available when in the BIOS Setup Utility.
7. Select **Readme File**. Review its Table of Contents for pertinent topics.

Configuration Assistant and Installation Assistant

Before you run Configuration Assistant and Installation Assistant, you may need to run the Symbios Configuration utility and the Setup Utility to do the following:

- If you need to verify or modify SCSI host adapter settings.
 - If you need to low-level format SCSI disks or verify SCSI disk media, run the Symbios Configuration utility.
1. Go to the Setup Utility section later in this chapter.
 2. Insert the Navigator CD into the CD-ROM drive. If the system fails to start, follow the instructions on the screen.
 3. Set language, time, and date, if necessary.
 4. Go to the Navigator Main Menu and select **Configuration Assistant and Installation Assistant**.
 5. Follow the onscreen instructions in Configuration Assistant to continue the NetServer installation.

Installation Assistant

HP Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration. If Configuration Assistant detects that a newer version of the BIOS is available on the HP Navigator CD-ROM it will prompt you to update the BIOS.

Configuration Assistant

Configuration Assistant guides you through the steps necessary to configure the HP NetServer. You can view configuration advisories at one step and change your hardware if necessary.

HP Configuration Assistant and Installation Assistant guide you through the steps necessary to configure the NetServer. Three methods of configuration are available: Express, Custom, and Replicate.

Express Configuration

Express configuration is the preferred method to configure your NetServer. It leads you through the configuration process in sequence and offers you default selections. Express configuration includes the following steps:

- Update System BIOS:

This step appears if Configuration Assistant detects a newer version of the BIOS is available on the *HP NetServer Navigator CD-ROM*. You must update your BIOS to the new version if you want to continue in Express mode. You can also change the language the BIOS displays.

- Select NOS:

You will be asked to select the NOS and version you plan to install.

- Select NOS Installation Mode:

For certain versions of Novell NetWare/IntranetWare and Microsoft Windows NT Server, you will be asked;

Would you like to use HP's automated mode of NOS installation?

- ◊ Select **Yes** for automated NOS installation.

Perform an automated NOS installation for first-time installation of Novell NetWare/IntranetWare or Microsoft Windows NT Server on a factory-configured NetServer. Automated NOS installation will guide you through the NOS installation, set up the hard disk drive, and

configure your NOS with appropriate drivers for HP-bundled configurations.

This installation also loads the Local Support Tool onto Windows NT or NetWare systems. The Local Support Tool is a stand-alone support tool accessed directly from the NetServer. It gives you information to help you manage the NetServer.

Automated NOS Installation: For certain versions of Novell NetWare/IntranetWare or Microsoft Windows NT Server, Configuration Assistant partitions and formats the hard disk drive, and Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration.

- ◇ Select **No** for manual NOS installation.

Perform a manual NOS installation if you are installing a NOS other than certain versions of Novell NetWare/IntranetWare or Microsoft Windows NT Server, or if you have replaced any HP components.

For Manual NOS Installation Only: Before you perform a manual NOS installation, you must print instructions and manually create NOS-specific driver diskettes as follows:

- ◇ **Create Drivers Diskette(s):** On the Create Drivers Diskette(s) screen, select **Create Drivers Diskette(s)** to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
 - ◇ **Print and Read Instructions:** On the Show NOS Installation Instructions screen, select **Save to Disk** to copy the Network Operating System Installation Instructions to disk. Then print them out from the disk. Read the instructions first, and then follow them to manually install the NOS.
- **View Configuration Advisories:**

Read the configuration advisories and print them if necessary. You can change your hardware at this time to conform to the advisories.

- **Configure Remote Management:**

This utility configures the Integrated Remote Management device for remote management. It enables remote, dial-up HP NetServer management.

To configure Integrated Remote Assistant, select **Configure Remote Management** on the Configure Remote Management screen.

- Show System Information:

Use this screen to display information about standard and accessory boards and devices in the system, as well as the used and available system resources.

- ◊ Select **View Hardware Inventory** on the Show System Information screen to display information about standard and accessory boards and devices in the system.
- ◊ Select **View Resources** on the Show System Information screen to display used and available system resources such as memory ranges, I/O port ranges, DMA channels, and interrupt (IRQ) levels.

- Configure Disk Array:

This configures your HP disk array, but requires you to fill out the Disk Array Configuration Worksheet, before proceeding. Click **Help** for more details.

NOTE

When you configure an array, the default cache mode is write-through. For write-back mode, install the battery back-up accessory and a universal power supply.

- Install Utility Partition:

This step creates a 32 MB DOS-based utility partition on the NetServer hard disk where HP Navigator will copy DiagTools, the BIOS Update utility, the Event Log Report utility, the Disk Array utility, the NIC Configuration utility, the Integrated Remote Assistant utilities, troubleshooting utilities, and other utilities. However, this is not available for SCO UNIX.

Select **Execute** on the Install Utility Partition screen.

- Execute Card Utilities:

Use this function, when Configuration Assistant detects installed boards, which have additional configuration utilities on the *HP NetServer Navigator CD-ROM*. By selecting **Execute** on the Execute Board Utilities screen, you can execute these utilities to complete the configuration of the boards.

Custom Configuration

Select **Custom** if you are experienced in NetServer configuration and have a preferred sequence of steps, or if you prefer to configure your system one component at a time. In Custom configuration mode, you perform the same configuration steps as provided in Express configuration mode, but these can be done in any order.

After you have selected the NOS, version, and NOS installation mode (automated or manual), and after you have viewed the Configuration Advisories, the Custom Configuration screen displays the following menu:

Essential Steps

- **Configure Remote Management:**
This executes the Integrated Remote Assistant configuration utility.
- **Configure Disk Array:**
This configures your HP disk array, but requires you to fill out the Disk Array Configuration Worksheet before proceeding. Click **Help** for more details.
- **Execute Card Utilities:**
This executes the available configuration utilities for installed cards.
- **Create Drivers Diskette(s):**
SCSI IDE HP NetRaid Adapter and video adapter drivers for MS Windows NT 4.0 on HP NetServers.

Recommended Steps

- **Update System BIOS:**
This utility will update the system BIOS. The utility partition, if installed, will also be updated.
- **Install Utility Partition:**
Installs utility partition to the boot or system drive. This is not available under SCO UnixWare.
- **Show System Information:**
Shows hardware inventory and system resource (interrupts, I/O space) allocation.

- Show NOS Installation Instructions:

Select this option to save a copy of NOS installation instructions to diskette and to print it out.

Replicate Configuration

In Replicate configuration mode, you can save a copy of your current system configuration or load a previously saved configuration. This method saves time when configuring multiple, identical systems. Select **Replicate** on the Configuration Assistant menu.

NOS Installation

The NOS installation process, whether automated or manual, is the same in custom configuration mode as in Express configuration mode. The difference is Express guides you through the process.

Manual NOS Installation

Before you perform a manual NOS installation, you must manually create NOS-specific drivers diskettes and print instructions. You can do this either on a separate PC or on the powered-up NetServer.

- ◇ Create Drivers Diskette(s): On the Create Drivers Diskette(s) screen, select **Create Drivers Diskette(s)** to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
- ◇ Print and Read Instructions: You may already have done this directly from the Custom Configuration menu option **Show NOS Instructions**. If not, on the Show NOS Installation Instructions screen, select **Save to Disk** to copy the Network Operating System Installation Instructions to disk. Then print them out from the disk. Read the instructions first and then follow them to manually install the NOS.

Automated NOS Installation:

For certain versions of Novell NetWare/IntranetWare or Microsoft Windows NT Server, Configuration Assistant partitions and formats the hard disk drive(s), and Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration.

HP Management Solutions

HP Management Solutions is a comprehensive suite of utilities, applications, and built-in features to manage multiple HP NetServers locally or from remote locations. If you are unfamiliar with these products or concepts:

- To view information on HP TopTools and all HP NetServer management options for your NetServer, go to the Management Web site on the HP Web Site at

`http://www.hp.com/netserver/products/management`

- Read the *HP NetServer Server Management Reference Guide* included with your NetServer. This guide covers TopTools and all other HP NetServer management utilities and options for the HP NetServer.
- View demonstrations of HP Remote Assistant and other third-party management applications. On the *HP NetServer Navigator CD-ROM*, select **HP Management Solutions** on the main menu.

TopTools for Servers

HP TopTools for Servers is browser-based management software that provides remote administration and monitoring of critical HP NetServer components. TopTools provides vital information for the fast troubleshooting and proactive management of NetServers. Processors, memory, storage, and NICs are a few examples of the components managed by TopTools.

Some of the features of TopTools include:

- Notification of problems with key hardware components including memory, disk drives, SCSI controllers, NICs, and power supplies, as well as environmental problems with temperature and voltage
- Unified event log to review a complete history of HP NetServer activity in one place
- Predictive disk problem warning backed by HP pre-failure warranty replacement
- Disk capacity threshold alert and usage tracking
- View critical HP NetServer inventory information such as the BIOS version, driver and firmware versions, PCI slot contents, and serial and parallel ports.

- Easy linkage with leading management platforms including HP OpenView Network Node Manager and Workgroup Node Manager
 - Support for DMI 2.0, which provides the same Desktop Management Interface inventory information for NetServers as for desktop PCs
- Install TopTools to help your service provider troubleshoot your system. TopTools is located on *HP TopTools CD-ROM* included with the system.
- See the *HP NetServer Management Reference Guide* for detailed installation instructions.
 - You can also download the TopTools software and documentation from the NetServer Web Site at

<http://www.hp.com/toptools>

Click on the words **Download Now** on the left-hand side of the screen.

TopTools Remote Control

TopTools Remote Control is a management function bundled with the HP NetServer and embedded into the System board. It enables remote LAN or modem-based server management and alerting through a pager or e-mail for improved remote administration of your NetServer.

TopTools Remote Control provides:

- Remote monitoring of critical HP NetServer components, regardless of system state
- Troubleshooting and problem resolution, regardless of system state
- Pager or e-mail notification of critical HP NetServer
- The Event Log
- Server reset and power control
- Remote system BIOS or TopTools Remote Control update
- Password and dial-back security
- Text console redirection of the HP NetServer console
- Full graphics console redirection of Microsoft Windows NT Servers across the network or over a modem connection using Symantec's pcANYWHERE32 software (included with the system).

See the *HP TopTools Remote Control User Guide* for details.

PcANYWHERE32

pcANYWHERE32 is remote-control graphics-redirection software from Symantec Corporation that allows you to take control of Microsoft Windows NT Servers across the network or over a modem. Refer to the *HP NetServer Online Documentation CD-ROM* for details, or the *HP TopTools Remote Control User Guide*.

NetServer Utilities

HP NetServer Utilities takes you to a menu where you can directly execute utilities such as the following:

- **DiagTools:** An easy-to-use hardware diagnostic for system verification, burn-in, and rapid troubleshooting.

NOTE

HP recommends using the HP DiagTools utility to verify all NetServer functions are operating correctly, after completing all the configuration topics. The HP DiagTools utility also generates a text file containing the hardware detected and the DiagTools test results. This text file, called a support ticket, should be saved to a diskette and used for future reference, especially by your support provider.

- **Event Log Report Utility:** Displays all logged HP NetServer management events, Power-On Self Test (POST) errors and other system events.
- **Diskette Library:** Allows you to conveniently generate a flexible diskette for any utility or driver available on the *HP NetServer Navigator CD-ROM*. For example, you can create flexible diskettes for the following utilities and drivers: BIOS Update, HP NetServer Assistant, PowerWise Assistant, DiagTools, and NOS Drivers.
- **Print or View Information:** Allows you to print or view the current system configuration including details of which boards are detected in the system and which resources are allocated to the boards.
- **Change User Preferences:** Lets you change the language used by the HP Navigator CD-ROM, and the system date and time.

Setup Utility

The HP NetServer has a Setup Utility (BIOS) in read-only memory. The utility features several system configuration and housekeeping options, including security, and system console characteristics.

The following sections tell how to access the Setup Utility, and how to perform selected tasks.

Starting the Setup Utility

To reach the Setup Utility, boot or reboot the system. After the first boot messages are displayed, this prompt appears:

Press <F2> to enter SETUP

Press [F2] while the prompt is displayed. More boot messages appear, followed by the message Entering Setup . . . After the embedded (Symbios) SCSI Configuration initialization and the Optional ROM scan both finish, the menu bar of the Setup Utility appears.

If you do not press [F2], the HP NetServer boots normally.

Menu Bar

The Setup Utility provides a menu bar that leads to several menus. The menu bar choices are:

- **Configuration** – Sets the system time and date, or select from the following options:
 - ◇ **Integrated I/O Port Settings** – Use this menu to enable/disable and then set the base I/O address and IRQs of the two serial ports, Serial A and Management port and set the parallel port's parameters, including its mode (output only, bi-directional, or DMA channel).
 - ◇ **PCI Device Settings** – Use this menu to disable Smart Interrupt Routing for each slot and manually set the PCI board's IRQs installed into each of the six slots. This menu also includes setting the IRQ Locking feature for the embedded SCSI channels and the embedded LAN connection. Three more IRQs can be made available by disabling the Parallel, Serial A, and Management Ports.
 - ◇ **Boot Settings** – Use this menu to check the flexible disk drive, display the NetServer's configuration at boot time, skip certain tests during the boot process to speed up boot time, or change the (default) boot order, including device type, network boot, and hard drive boot order.

- ◇ **I₂O Settings** – Use this menu to set the maximum number of I₂O drives (4), the message timeout multiplier (1 to 1000), the pause interval during POST, or start the IRTOS (I₂O Real Time Operating System) manually.
- ◇ **Embedded LAN and SCSI Settings** – Use this menu to:
 - * Change between HP NetRAID (default) and LVD SCSI modes
 - * set the Embedded NIC to enable, disable, or enable as a boot device (Boot ROM Enabled).

If the embedded NIC is enabled as a boot device, boot ROMs for enabled SCSI devices cannot be loaded.
 - * Enable and disable the Wake-On-LAN feature.
- ◇ **Keyboard and Mouse Settings** – Use this menu to set the parameters of the keyboard, including NumLock, and set the PS/2 mouse to Auto (detect)/Enabled/Disabled. Disabling the mouse frees up IRQ 12, but prevents any installed PS/2 mouse from functioning.
- ◇ **Flexible Disk and IDE Settings** – Use this menu to change the flexible disk type or add an IDE hard drive to HP NetServer's configuration. This would include selecting the hard drive's characteristics manually or automatically, and selecting which drive would be the Primary Master or Slave, the CD-ROM or the IDE hard drive.
- ◇ **Processor/Memory Settings** – Use this menu to select if the processor module's serial number (if supported) will be read by firmware, enables memory caching, and adds an extended memory gap in system address space.
- **Security** – Provides two submenus to choose from.
 - ◇ **Power-On Password** – Sets the administrator and user passwords, sets system to require a password after booting.

The Administrator password must be set before setting the User password. Once the administrator password is set, the administrator can access and change all fields in the screens.

If the User password is set, the user may only change the system time, date, and user password. The user may view all fields, but cannot alter any of the settings.
 - ◇ **Hardware Security** – Sets the system parameters for operating in Secure Mode.

- **Exit** – Exit the Setup Utility by saving changes or exit without saving changes, which reverts to previous settings.

When you exit, the HP NetServer reboots.

Using the Setup Screens

Online help explains the settings displayed on the Setup Utility screens. Instructions are also provided for navigating between the screens and entering or changing the setup data.

- Press the right-arrow and left-arrow keys to move between selections on the menu bar. The menu bar is present at the top of the main selections.
- Press the up-arrow and down-arrow keys to move between fields on each screen. The currently-selected field is highlighted.
- Certain fields ask you to choose from a list of entries. In such cases, press the plus (+) or minus(-) keys repeatedly to display each possible entry, or the **Enter** (or **Return**) key to choose from a pop-up menu.
- Small arrow points precede some field names. This means the field contains a submenu. To visit the submenu, select it with the arrow keys and press the **Enter** key. The submenu then appears in place of the current screen.
- The **Esc** key is the exit key. If you press the **Esc** key on one of the top-level screens, the Exit menu appears. If you press **Esc** on a submenu, the previous screen appears. When you are making selections from a pop-up menu, use the **Esc** key to close the pop-up without making a selection.

Changing the System Date and Time

Use this topic to change the HP NetServer's date and time and refer to the following procedure.

1. To reach the Setup Utility, boot or reboot the system and press **F2** when prompted.
2. If necessary, use the left-arrow key to select **Configuration** from the menu bar at the top of the screen.

Once in the Setup Utility, the menu bar appears at the top of the screen with "Configuration, Security, and Exit" shown. The Configuration menu is the default menu and should be the highlighted selection at the left of the menu bar when the Setup Utility first opens.

3. If necessary, use the up-arrow key to move to the **System Time** field.

The "System Time" field is highlighted by default when the "Configuration" menu is selected. This field actually consists of three sub-fields, enclosed in brackets [xx:xx:xx]: hours to the left (24-hour clock), minutes in the middle, and seconds to the right.

4. Type in the hour and press **Enter** to move to the minutes field.
5. Then type in the minutes and press **Enter** again to move to the seconds field.
6. Type in the seconds and press **Enter**, then use the arrow keys to leave this field.
7. Scroll to **System Date** field to enter the system date in the field.

The dates are entered in the "System Date" field in the same way as the time is entered in the "System Time" field. This field also has three separate sub-fields for month, day, and year enclosed in brackets [xx/xx/xxxx].
8. Type in the month and press **Enter** to move to the day field.
9. Then type in the day and press **Enter** again to move to the year field.
10. Type in the year and press **Enter**, and then use the arrow keys to leave this field.
11. Use the right-arrow or left-arrow key to select the **Exit** menu.
12. Choose **Exit Saving Changes** from the list of exit options, then press **Enter**.

A dialog appears and asks you to confirm your decision.

13. Choose **Yes** and then press **Enter**.

Then the HP NetServer reboots.

Setting the HP NetServer's Boot Passwords

Use this topic to set a password to boot the HP NetServer. Further, you can have a separate administrator password and a user password, but the user password is limited in access once booted.

To configure the HP NetServer for passwords and require a password on boot-up, refer to the following procedure.

1. If not already in the Setup Utility, boot or reboot the system and press **F2** when prompted.

2. Use the right-arrow or left-arrow key to select **Security** from the menu bar.

As soon as it is selected, the selections for the Security menu appear as shown below.

Power-On Password

Hardware Security

The arrowhead indicates there is a submenu to select from.

3. If necessary, use the arrow key to move to the **Power-On Password** menu selection and press **Enter**.

The Power-On Password is highlighted by default when the Security menu is selected.

The first line in the menu is, "Administrator Password is [Set or Not Set]"

- ◇ If no password has been set, then "Not Set" will appear in the field. If this is the case, then you are not allowed to make any other selections in this menu until you set an Administrator Password.

The Administrator Password controls access to the Setup Utility and its settings. The User Password has only limited access to the Setup Utility, such as Date, Time, and Password.

- ◇ If "Set" is in the field, then you can change the password or make other selections in the menu. However, you must start with the User Password, but may choose to skip setting the User Password.

NOTE

You must set the Administrator Password before changing a User Password or configuring the HP NetServer to boot with a password.

4. Press the **Enter** key to enter a new password or change the old one.

A pop-up menu appears titled, "Set Power-On Password". If no password has been entered, the field "Enter New Password: []" is highlighted. If a previous password has been entered, the field "Enter Old Password: []" is highlighted.

5. Enter the password (new or old) in the appropriate field and press **Enter**.

The password is accepted and the next field just below it, "Re-Enter New Password: []" or "Enter New Password: []" field is highlighted. For security reasons, the password does not appear on the screen.

6. If necessary, enter the new password in the "Enter New Password: []" field.
7. Enter the new password again in the "Re-Enter New Password: []" field.

After re-entering the new password a pop-up menu displays asking you to confirm your selection.

NOTE	To leave the pop-up menu without entering a password, press the Esc key at any time.
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8. Choose **Yes** and then press the **Enter** key.

The "Administrator Password is" field changes to "Set" and on the next boot the HP NetServer will request a password to access the Setup Utility.

9. If you want a password on boot up, you may skip the "User Password is:" field and go directly to "Network Server Mode: [Disabled]" in Step 10.
10. If you want to enter a User Password, use the arrow keys to move to the "User Password is:" field and repeat Steps 3-7 for the User Password.
11. Use the arrow keys to move to the "Network Server Mode: [Disabled]" field.
12. Press **Enter** to toggle [Disabled] to "Enabled" in the Network Server Mode field.

Setting this mode to Enabled will cause the HP NetServer to prompt for a password when booting from a diskette or a CD-ROM, but will not require a password when booting from a hard drive. The power-switch and keyboard will remain locked until the password is typed.
13. To use the front panel keyboard lock button, use the arrow keys to move to the "Keyboard Lock [Disabled]" field.
14. Press **Enter** to toggle [Disabled] to "Enabled" in the Keyboard Lock [Disabled] field.

Setting this feature enables the keyboard lock button on the front bezel of the HP NetServer. Once enabled, pressing the keyboard lock button will lock the keyboard and mouse until the password is typed. You must set the password before enabling this feature.
15. To add video blanking to the password on boot, use the arrow keys to move to the "Video Blanking [Disabled]" field.

16. Press **Enter** to toggle [Disabled] to "Enabled" in the Video Blanking [Disabled] field.

Setting this feature only provides a blank screen on the HP NetServer's Monitor, when the Keyboard Lock or Network Server Mode are also enabled. The screen remains blank until the password is typed and only applies to the monitor connected to the HP NetServer's embedded video connection. As with the other features the Video Blanking is dependent upon, you must set the password before enabling this feature.

17. To use the Hardware Security menu under Security, use the help files provided with the selections.
18. Select the **Esc** key to exit this menu.
19. Use the right-arrow key to go to the Exit menu.
20. Choose **Exit Saving Changes** from the list of exit options, and then press Enter.
A dialog appears and asks you to confirm your decision.
21. Choose **Yes** and then press the **Enter** key.
Then the HP NetServer reboots.
22. To change one of the passwords at a later date, return to the Security menu and repeat Steps 2 through 7, above, for one or both passwords.

NOTE	The HP NetServer allows you to reset the password by toggling a switch (position 6) in the Configuration Switch Block on the System board.
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Changing Internal Device Boot Priority

You can change the boot priority of the HP NetServer's internal mass storage devices: the CD-ROM, the flexible disk drive (or other removable device), and hard drives connected to the HP NetServer's internal SCSI ports. To do this:

1. Select "Boot Settings" from the Configuration menu, using the down-arrow or up-arrow key, and press **Enter**.

A Boot Settings screen appears, very similar to the following one:

Floppy check: [Disabled]

Summary screen: [Enabled]

Quick Boot mode: [Enabled]

Boot Device Priority

Hard Drive Priority

2. Use the down-arrow key to move to the "Boot Device Priority" field.
3. Press **Enter** to change the order and a list appears very similar to the one below:

1. [CD-ROM]
2. [Flexible Disk]
3. [Hard Drive]
4. [Network Boot]

The list provides the current boot order of the internal device types, including a NIC in the HP NetServer with a boot prompt and connected to a network. If the [Hard Drive] selection is moved to the top of the boot list, it will use the hard drive selected in Steps 6-8 to boot the system.

- a. To change the order, use the up- and down-arrow keys to select one of the device types.
 - b. Use the plus (+) or minus (-) keys to move a device type up or down the list.
4. Press **Esc** to exit one level to the Boot Settings menu.

This moves you back one level to the Boot Settings list shown in Step 1 above.
 5. To change the hard driver boot order, scroll to "Hard Drive Priority" and press **Enter**.

A hard drive (HD) boot list similar to the one below appears on screen depending on the hard drives and bootable cards (DAC or SCSI controller)

boards) installed. The system attempts to boot the NOS on the first hard disk drive (or DAC or SCSI board) found in this list. If no NOS is found, the system tries the next hard drive in the list until a NOS is found.

1. **[Bootable Cards]**
2. **[#30 ID01 LUN0 HP 4.26GB A]**
3. **[#30 ID02 LUN0 HP 4.26GB A]**

6. Use the plus (+) or minus (-) keys to move the desired hard drive (or DAC or SCSI board) to the top of the list.
 - ◇ The HD boot list has a maximum capacity of eight (8) logical drives.
 - ◇ If a bootable Disk Array Controller (DAC) board is used, the RAID array is seen as a single logical drive.
 - ◇ If more than eight logical drives are connected to the HP NetServer, drives 9 and above (including the DAC or SCSI boards and the drives connected to each) will not be recognized by the Setup Utility.
 - ◇ You will not be able to enter the Setup Utility to make changes to these logical drives (including DACs and SCSI boards) during the boot process.
 - ◇ However, these logical devices (including DACs and SCSI boards) will be properly recognized and activated by the respective NOS.
 - ◇ For more information about selection guidelines, refer to Information Assistant on the *HP NetServer Online Documentation CD-ROM*.
7. Press **Esc** to exit the Hard Drive menu.
8. Press **Esc** again to exit the Boot Settings menu.
9. Use the right-arrow key to select the **Exit** menu.
10. Choose "Exit Saving Changes" from the list of exit options, then press **Enter**.

A dialog appears asking you to confirm your decision.
11. Choose "Yes" and press **Enter**.

Then the HP NetServer reboots.

Clearing CMOS

The Setup Utility does not provide a method of clearing CMOS from within the Utility. To clear the CMOS of the configuration settings, you must use the configuration switch on the system board.

1. Power down the HP NetServer and gain access to the system board.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

2. On the system board, reset switch 5 on the configuration switch block from Off (open) to On (closed).

To locate the configuration switch block on the system board, refer to Chapter 7, "Installing Additional Processors."

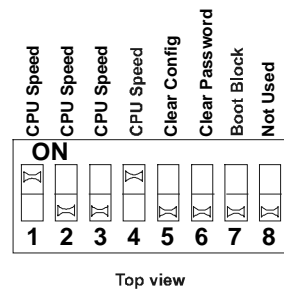


Figure 10-2. Resetting the Configuration Switches

3. Power up the HP NetServer.

Refer to Chapter 2, "Controls, Ports, and Indicators."

4. Allow the HP NetServer to boot the operating system.

5. Shut down the operating system and power down the HP NetServer.

Refer to Chapter 2, "Controls, Ports, and Indicators."

6. Reset switch 5 from On (closed) to Off (open) on the system board's configuration switch block. See Figure 10-2.

7. Replace the cover and power up the HP NetServer.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

SCSI Configuration Utility

NOTE	The Symbios Configuration Utility is not available if you leave the NetRAID default unchanged. It is only available for LVD SCSI mode.
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If you need to verify or modify SCSI host adapter settings, or if you need to low-level format SCSI disks or verify SCSI disk media, run the Symbios Configuration utility:

1. Turn on or reboot your system.
2. During system start-up or reset, when the following message appears, press the **[CTRL]** and **[C]** keys at the same time.

Press [Ctrl] [C] to start Symbios
Configuration Utility
3. Use the arrow keys to move the cursor, press **Enter** to select an option, and press **Esc** to exit.
4. To change adapter settings:
 - ◇ Select an adapter from the list in the main menu.
 - ◇ Select **Adapter Setup**. This option configures the SCSI ID setting and other advanced adapter settings.
5. To format a hard disk or change hard disk parameters:
 - ◇ Select an adapter from the list in the main menu.
 - ◇ Select **Device Selections**.
 - ◇ Select the hard disk to format.
 - ◇ Select **Format** menu option.

11 Information Assistant

Introduction

The *HP NetServer Online Documentation CD-ROM* includes "Information Assistant," which contains the entire set of documentation for your HP NetServer.

Information Assistant provides:

- Quick and efficient access to information about installing, managing, and servicing your HP NetServer
- Complete documentation on the HP NetServer and accessories
- Important information on your NOS
- Reference information, such as:
 - ◊ Functional descriptions
 - ◊ Technical papers

This information helps you better understand your HP NetServer and make choices compatible with your network.

Using Information Assistant

There are two ways to use the *HP NetServer Online Documentation CD-ROM* on:

- The HP NetServer you are installing, or
- a Windows client machine (see the section "Installing HP Information Assistant Software").

Getting Help



The Help button. Help explains how to use Information Assistant.

Finding Information

Information Assistant provides many ways to navigate through its topics and locate information. For example, you can:



Select a topic from the Map. Displays a window with an outline of every module and topic in Information Assistant for the selected product. The Map enables you to view the contents of the Information Assistant in outline format, and to then select a topic.



Search for a word or phrase using Search. Search performs full-text searches for topic text. You can use search operators such as AND, OR, NOT, and NEAR to further narrow your search. The search function works within the selected module.



Select a Product button. The Product button presents a product or group of products for selection.



Select a topic from the Table of Contents. Displays a Table of Contents for the selected product from which a subtopic may be selected for viewing.



Go to a previous topic with Previous button. Displays the previous topic within a module.



Go to the next topic with Next button. Displays the next topic within a module.



Go to a previously viewed topic with Back button. Displays the previous topic viewed. Clicking this button more than once backtracks through topics in the order that they were viewed.



Print. Print the current topic of the product book. After selecting the print option, the Windows Print dialog box appears. Print options vary with the capabilities of your printer.



Exit. Closes the window and exits the application.

You can also navigate between topics by using hot spots and by using the History button to revisit previously viewed topics. For example:

- **Jump to other topics.** Click on hot spots in graphics and text that link to other topics or to more information about the current topic. Hot spot text appears as bold green text. Identify hot spots on graphics by moving the pointer over the graphic. When you point to a hot spot, the pointer changes to a hand.
- **Return to any previously viewed topic by choosing History from the Topic menu.** As you view topics, Information Assistant keeps a record of where you have been. The History button displays a list of the topics you have viewed, starting with the most recent. Select any topic from this list to return to it.

Copying and Printing Information

You can copy topic text in Information Assistant for use in other applications, such as word processors, by copying text onto the Windows Clipboard and pasting the text into any Windows application.

To print topics in Information Assistant, use one of the print options on the File drop-down menu. You can choose to print the current topic or all of the topics in a product book.

After selecting the print option, the Windows Print dialog box appears. Print options vary with the capabilities of your printer.

Installing HP Information Assistant Software

HP Information Assistant runs on a PC running Windows 3.1, Windows 95 and 98, or Windows NT. Install it from the *HP NetServer Online Documentation CD-ROM* onto the system that will manage the HP NetServer or onto the HP NetServer itself.

The installation program gives you the option of accessing the data files from a hard disk or from the CD-ROM. The default is to access the data files from the CD-ROM. You can copy the data files to your hard disk to improve access time, but this could take up a significant amount of disk space.

Installing from the CD-ROM

To install Information Assistant onto a Windows PC from the *HP NetServer Online Documentation CD-ROM*, perform these steps:

1. Turn on your computer.
2. Insert the *HP NetServer Online Documentation CD-ROM* into the CD-ROM drive.
3. If you have the Autorun feature enabled, the CD-ROM starts automatically.
4. If you have Autorun disabled, at the command prompt, type the following:

***drive:* \infoasst\setup**

where *drive* is the letter of the CD-ROM drive.

5. Follow the instructions that appear on your screen.

The Setup utility creates a new program group called NetServer Information Assistant, with an icon for running the application.

12 Troubleshooting

Troubleshooting Tools

If you are having problems installing your HP NetServer, a number of different tools are available for troubleshooting:

- *HP NetServer Information Assistant* (see Chapter 11) contains the following tools:
 - ◇ Troubleshooting Information
 - ◇ Parts Information
 - ◇ List of Error and Beep Error Messages

WARNING

Before removing the top cover, always disconnect the power cord and unplug telephone cables. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry.

- The *HP NetServer Navigator CD-ROM* contains HP NetServer Utilities. At the HP NetServer Navigator Main Menu, select Access NetServer Utilities to use the following tools:
 - ◇ **HP DiagTools Utility:** An easy-to-use hardware diagnostic for NetServer verification, burn-in, and rapid troubleshooting. When you select DiagTools from the Utilities menu, you are prompted to insert a diskette. DiagTools is then copied from the Navigator CD-ROM to the diskettes. You can also run DiagTools from the utility partition.
 - ◇ **Event Log Report Utility:** Describes server management events and lets you review a list of errors and other system events.

- ◇ **More NetServer Utilities>>Diskette Library:** Enables you to conveniently generate a flexible diskette for any utility available on the *HP NetServer Navigator CD-ROM*. For example, you can create diskettes for the following utilities: BIOS Update, NOS Drivers, and DiagTools.

CAUTION

Replace all covers before operating the HP NetServer, even for a short time. Otherwise, overheating can damage chips, boards, and mass storage devices.

However, you can safely remove the top cover while the NetServer is running to remove and replace PCI Hot-Plug boards. For any other service activity requiring access to the system board or I/O board, power down the NetServer and observe all safety precautions.

- For problems with the disk array controller board, refer to the appropriate HP NetRaid manuals.
- For problems with HP TopTools, refer to the *HP TopTools Administrator Guide* on the HP Web Site at
`http://www.hp.com/toptools`
- For general information on management products, refer to
`http://www.hp.com/go/netserver_mgmt`
and search for "management."

Common Installation Problems

The following sections contain general procedures to help you locate installation problems. If you need assistance, it is recommended that you contact your reseller first. If you require assistance from Hewlett-Packard, see the *HP NetServer Warranty and Service/Support Booklet* or refer to the *HP NetServer Online Documentation CD-ROM* included with your product.

Troubleshooting Sequence

To troubleshoot an installation problem, perform the following checks in the order given:

- Check all cable and power connections, including those in the rack.

- Ensure the HP NetServer is configured properly.

Most HP NetServer problems are the result of incorrect system and SCSI subsystem configurations.

- ◊ Check the Setup Utility, and the SCSI Configuration Utility.
- ◊ If the HP NetServer is configured with a disk array, check the disk array utility.
- If the error is a network-related problem, determine if the server has enough memory and hard disk drive capacity. Consult your network operating system manual.
- Verify all cables and boards are securely plugged into their appropriate connectors or slots.
- Remove all extra options one at a time, checking its effect on the HP NetServer.
- Unplug the power cord, wait 20 seconds, plug the power cord in again, and restart the HP NetServer.
- If you suspect a hardware error, follow these steps:
 1. Log users off the LAN and power down the server.
 2. Extend the HP NetServer out of the rack and remove the top cover.
 3. Simplify the HP NetServer configuration to the minimum required:
 - * Monitor
 - * Keyboard
 - * Mouse
 - * 1 hard disk drive and 1 flexible disk drive
 - * 1 CD-ROM
 4. Remove all third-party options, and reinstall each one, one at a time, checking the HP NetServer after each installation.
 5. Replace the top cover and reconnect the power cord and other cables.
 6. Boot the HP NetServer and, if it does not function properly, refer to the following procedures.

If the System Does Not Power On

Follow these steps:

1. Check that all cables and power cords are firmly plugged into their proper receptacles.
2. Check that all parts of the system are turned on and properly adjusted.
3. If the server is plugged into a switched multiple-outlet box, make sure the switch on the outlet box is turned on.
4. Plug a different electrical device (such as a printer) into the power outlet, and turn it on.
5. Unplug the power cord, wait 20 seconds, plug the power cord in again, and restart the system.

If the System Powers On, but Fails POST

Do one of the following:

- If the system gives a series of beeps, this indicates a system error. Contact HP or your reseller.
- If the system fails POST and an error message appears, run the Error Message Utility. If the suggested solutions do not solve the problem, contact HP or your reseller.

If the System Passes POST, but Does Not Function

If an error message appears, read the error message text for actions to take. If the actions do not solve the problem, contact HP or your reseller.

If there is no error message, follow these steps:

1. Check to ensure that the NetServer is configured correctly in the Setup Utility.
2. If the server still does not work, turn it off and remove all external peripherals, except the monitor and keyboard. Test to see if the server now works.

If the server still does not work, turn off the monitor, the server, and all external devices, and check the internal hardware, as follows:

- a. Unplug the power cord and all telephone cables. Remove the HP NetServer cover.

- b. Check that all accessory boards are firmly seated in their slots.
 - c. Ensure that all disk drive power and data cables are securely and properly connected. Verify the mass storage configuration with the cabling and switch diagrams.
 - d. Verify that the DIMMs are firmly seated on the System Board. Verify that added DIMMs are HP DIMMs.
 - e. Replace the HP NetServer covers and lock the system.
 - f. Replace all power cords and cables.
 - g. Turn on the monitor.
 - h. Turn on the server.
 - i. Check for error messages.
3. Copy DiagTools from the *HP NetServer Navigator CD-ROM* to diskette, and run it from diskette.

DiagTools

You can create your own diskette of tools to diagnose components offline. A basic suite of tools checks key NetServer components, and a menu of advanced tests is available for in-depth testing.

Use DiagTools to test the following components:

- system board
- memory modules
- flexible disks
- serial ports
- video monitor
- processors
- hard disk packs
- keyboards
- parallel ports
- CD-ROM drives

DiagTools does not use any tests, which might write over and destroy user data. The advanced series requires user inputs and decisions are left to the advanced series.

Use DiagTools to:

- Display a high-level inventory of the system under test.
- Save and print a detailed inventory of hardware components.
- Conduct a basic test of components listed in the system inventory.

- Display "PASSED" or "FAILED" overall results of basic tests.
- Record detailed test results of basic system tests.
- Display a menu of advanced tests.
- Select and run one or a series of advanced tests.
- Add the record of results of advanced tests to the record of basic tests.
- View a list to locate the meaning of a specific error code.
- View one or more steps to help confirm and isolate error conditions.
- Browse the Support Ticket, containing detailed inventories and test results.
- Add comments to the Support Ticket.

If you have TopTools remote management software installed and configured for use with DiagTools, you can accomplish any of the above tasks remotely.

See the online documentation *HP NetServer DiagTools Error Reference and User Guide* for more information on DiagTools.

Error Messages

If you get an error message, insert your *HP NetServer Navigator CD-ROM* into the CD-ROM drive and press the **Reset** button on the front of the NetServer. An Error Message Utility automatically displays the error message and a possible solution.

For a complete list of error messages and solutions see the NetServer Information Assistant program on the *HP NetServer Online Documentation CD-ROM*.

Clearing the System Configuration

You may need to clear the system configuration if a program has corrupted the configuration, or if incorrect settings made in the Setup utility have made the display unreadable.

To clear the system configuration, follow these steps:

1. For both rack-mount and pedestal models, follow the instructions in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the server.
2. Turn off power to the HP NetServer and unplug the power cord. Remove the front bezel and top cover.

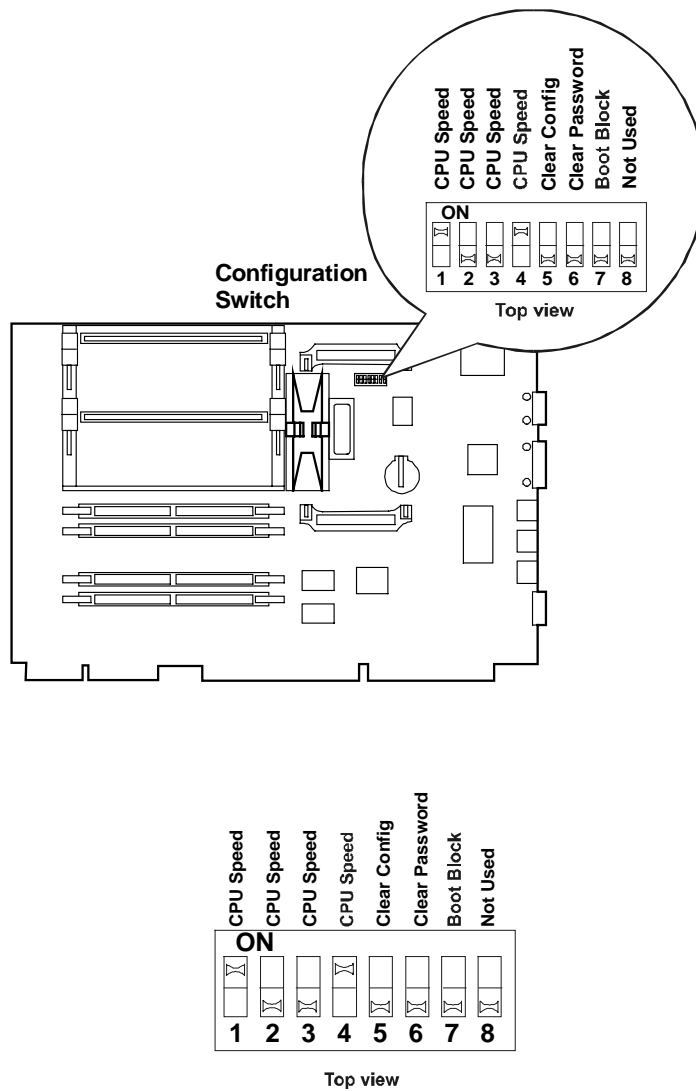


Figure 12-1. System Assembly Board and System Switches

3. Move the configuration memory switch, switch 5 on the system board, to the "ON = CLEAR CONFIG" position. Refer to Figure 12-1.

4. Plug in the power cord and turn on power to the HP NetServer. The following message appears:

```
The configuration has been cleared. Set the
Clear Config switch to the OFF position
before rebooting.
```
5. Turn off power to the HP NetServer and unplug the power cord.
6. Return switch 5 on the system board to the OFF position.
7. Replace the top cover and the front bezel, then plug in the power cord.
8. Turn on power to the HP NetServer. The error message may be displayed:

```
0012-34 : Incorrect System Configuration
```
9. Press the **[F2]** function key and answer **Yes** to save the configuration, then exit the Setup utility.

Password Problems

If you have forgotten the password, your HP NetServer will function normally, but you will not be able to change the system configuration settings in the Setup utility. To reset the password:

1. For rack-mount and pedestal models, follow the instructions in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the server.
2. Turn off power to the HP NetServer and unplug the power cord.
3. Refer to Figure 12-1 and move switch 6 on the system board (labeled "Clear Password") to the ON position.
4. Plug in the power cord. Turn on power to the HP NetServer, and allow it to complete its startup routine. The old password will be erased.
5. Turn off power to the HP NetServer. Unplug the power cord.
6. Return switch 6 to the OFF position.
7. Replace Cover 2 and the bezel.
8. Plug in the power cord. Turn on power to the HP NetServer and allow it to complete its startup routine.
9. If you wish to set the password again, during the power-on system hardware test press the **[F2]** function key to start the Setup utility.
10. Set the new password in the Security menu.
11. Press the **[F10]** function key and answer **Yes** to save the configuration, including the new password.

13 Alternative Rack Mounting

Introduction

This chapter provides the instructions for mounting the HP NetServer in an HP Systems rack.

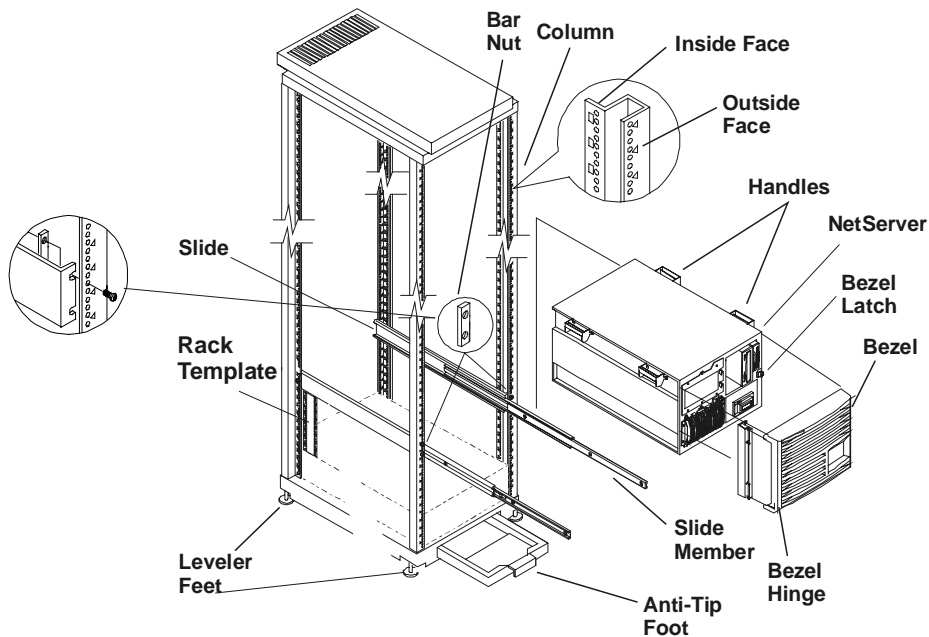


Figure 13-1. Installation Hardware

If you have the newer HP System/E or System/U racks, go to Chapter 8, "Installing the HP NetServer in the HP Rack System/E or Rack System/U." If you are mounting the NetServer in a non-HP rack, see the documentation in the appropriate rack accessory kit.

NOTE	The pedestal HP NetServer LH 3000 cannot be rack installed without a conversion kit. Contact your HP reseller for information about the HP NetServer LH 3000 to LH 3000r Conversion Kit.
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Rack-mounting Guidelines and Precautions

Observe the following guidelines and safety precautions during the rack-mount installation.

- Extend the rack's anti-tip foot prior to any work on the rack to prevent rack tip-over, equipment damage, and injury.

WARNING	Lower the leveler feet at the four corners of the rack to improve stability and prevent the rack from rolling away as devices are inserted into their rack mounts. Failure to use the anti-tip foot and leveler feet could result in serious injury.
----------------	--

- Uneven mechanical loading within the rack can cause hazardous conditions. Plan the placement of equipment in the rack to make sure that this problem does not occur.
 - ◇ Install components from the bottom up.
 - ◇ Place the heaviest components on the bottom of the rack.

CAUTION	If other rack components are to be mounted in the rack below the HP NetServer, install those components before starting to mount the NetServer.
----------------	---

- ◇ Use HP Rack Assistant to plan the rack configuration and to check power, weight, and stability of the configured rack. Download HP Rack Assistant from:
<http://www.hp.com/netserver/servsup>
- Install components such as DIMMs and processors into the system board assembly before rack-mounting the NetServer.
- Remove power supplies and hard drives before lifting the NetServer.

Always keep the following safety and environmental issues in mind, especially if you install the HP NetServer in a non-HP rack environment:

- **Maximum Recommended Ambient Temperature** - The maximum recommended ambient temperature of the room is 35°C (95°F).
- **Elevated Operating Ambient Temperature** - The ambient operating temperature within a closed or multi-unit rack assembly is likely to exceed the room's ambient temperature. Ensure the temperature within the rack itself does not exceed 35°C (95°F).
- **Reduced Air Flow** - As you mount equipment in the rack, make sure that you allow enough air flow for safe operation of the equipment.
- **Circuit Overloading** - Make sure that the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** - Maintain reliable earth grounding of rack-mounted equipment. Give particular attention to supply connections that are not direct connections to the branch circuit: for example, the use of power strips.

Preparing for Installation

Plan the placement of your HP NetServer LH 3000r and other rack components before proceeding with installation. Proper placement is vital for both safety and operating efficiency. For more details, see the *HP NetServer Rack Installation Road Map*.

STOP!

Read the *HP Rack Installation Road Map* before installing the HP NetServer LH 3000r. The road map contains important information you need to know for installing components in the rack.

HP Rack Assistant can be used to plan the rack configuration. HP Rack Assistant can be downloaded from the following web site:

<http://www.hp.com/go/netserver>

The rack-optimized HP NetServer LH 3000r fits into 19-inch-wide EIA (Electrical Industry Association) racks. Vertical space in the rack is measured in standard EIA units. One EIA unit is 1.75 inches (44.45 mm). The HP NetServer LH 3000r requires 8 EIA units of space.

Tools Required

The following tools are required to install the NetServer:

- Small adjustable open-end wrench
- Torx 15 and 25 drivers
- Phillips head screwdriver
- Hewlett-Packard Systems Rack template
- Tape or a marker pen to mark mounting locations

Installing the Slides

The following steps and illustrations describe how install slides for mounting a NetServer.

Marking the Columns

Mark the mounting location of the NetServer and mounting holes on each column of the rack as described.

NOTE

The EIA unit marks are stamped in the sheet metal of the columns. Use the rack template to mark the correct holes for mounting (on all four columns).

Marking Front Columns

Mark the slide mounting holes on the front columns.

1. Mark the baseline (bottom) of the NetServer at an EIA unit mark on the column.
2. Hold the bottom of the rack template at the baseline. Mark the top of NetServer (8 EIA units counted up from the baseline).
3. Mark the slide screw mounting holes (holes 20 and 22 counted up from the baseline).
4. Mark the second front column by repeating steps 1 through 3.

Marking Rear Columns

5. Mark the slide mounting holes on the inside faces of the rear columns.
6. Mark the baseline (bottom) of the NetServer at an EIA unit mark on the column.
7. Hold the bottom of the rack template at the baseline. Mark the top of NetServer (8 EIA units counted up from the baseline).
8. Mark the slide mounting hole (hole 21 counted up from the baseline).
9. Mark the second rear column by repeating steps 5 through 8.

Use the template to measure, or count up 21 from baseline on inside face for rear slide mounts.

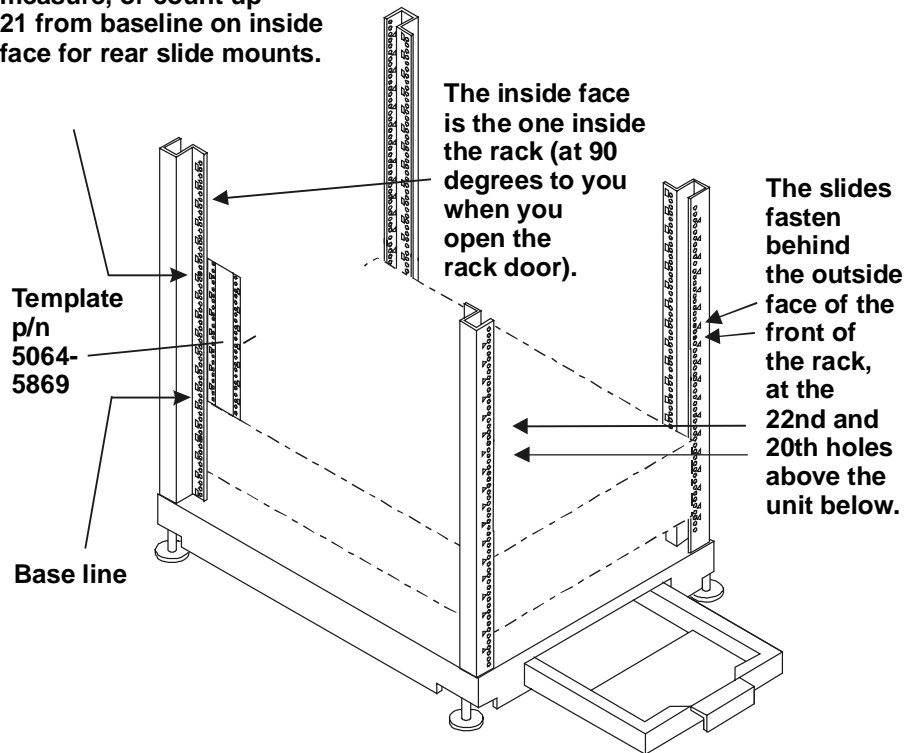


Figure 13-2. Marking the Rack Columns

Installing Rack Nuts

Rack nuts are installed on the front columns to secure the bezel latch and hinge. Use the rack template to locate the mounting holes.

10. Install the bezel latch rack nuts on the right front column (holes 11 and 15 counted up from the baseline).
11. Install the bezel hinge rack nuts on the left front column (holes 6 and 19 counted up from the baseline).

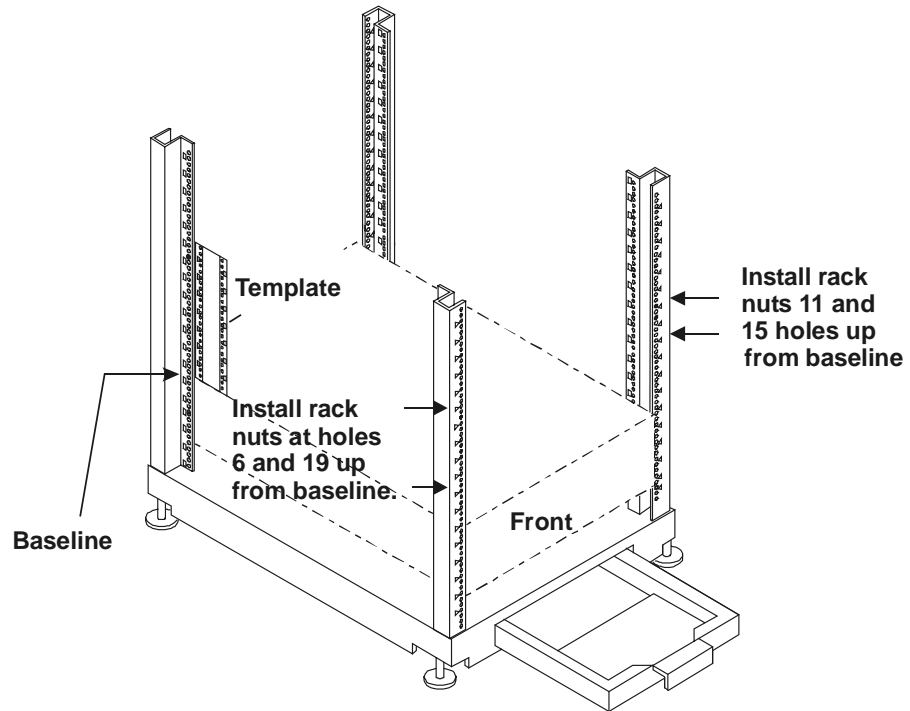


Figure 13-3. Installing Rack Nuts

Installing Bar Nuts

The "bar nut" is a two-hole metal bar used to secure the mounting flanges of the slide to the front columns.

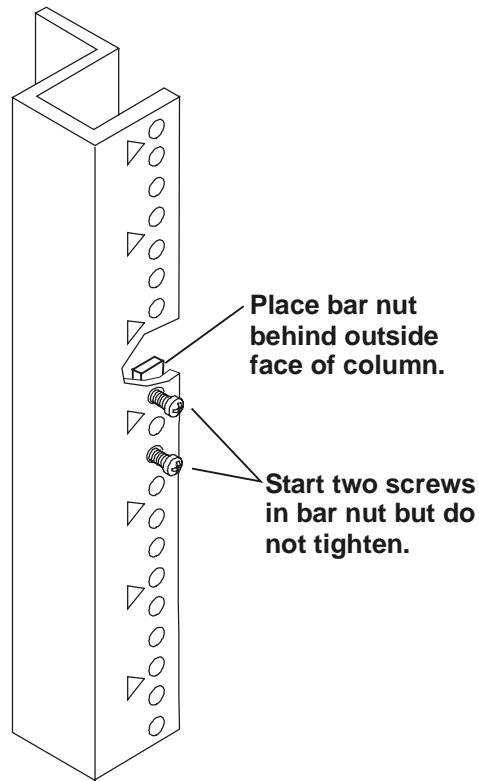


Figure 13-4. Installing Bar Nuts

12. Hold the bar nut behind the outside face of the front column, at the slide screw holes marked earlier. Start (but do not tighten) two screws through the face of the into the bar nut.
13. Install the bar nuts on both front columns.

Attaching the Slides

The following steps describe how to attach the slides to the columns.

14. Remove the removable mounting flange. A large, flat-blade screwdriver inserted between the flange and the slide from the end of the slide may help in removal. This mounting flange is not required when installing a slide in an HP systems rack.
15. Remove hex nuts and lock washers securing the removable mounting flange to the slide. Save the hex nuts and lock washers.
16. Hold the slide so the slide members extend out the front of the rack (see Figure 13-5).

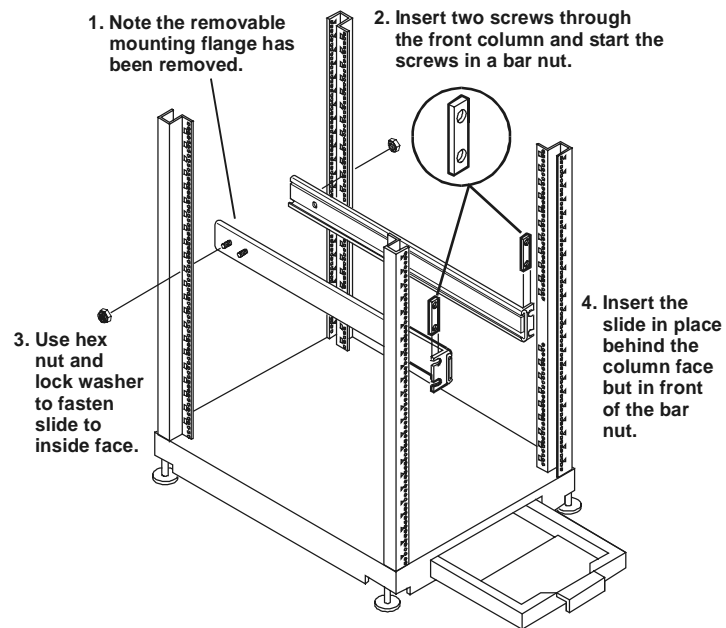


Figure 13-5. Attaching the Slides

17. Insert the slide fixed mounting flange between the column and bar nuts. Press the slide firmly against the front column (see Figure 13-6).

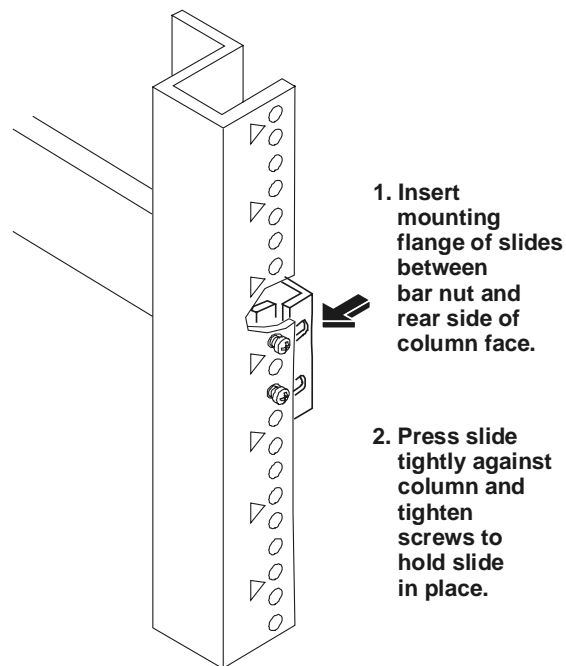


Figure 13-6. Securing the Slide to the Front Column

NOTE The slide members cannot be removed.

18. Tighten both screws in the mounting flanges of the slide.
19. Insert the threaded stud on the rear of the slide into the rear column-mounting hole marked earlier.
20. Secure the slide with a hex nut and lock washer saved earlier.
21. Repeat steps 14 through 20 and install the second slide in the rack.

Completing the NetServer Installation

Installing the HP NetServer on the slides, securing it to the rack, and installing the cable management arm completes the installation of the NetServer in the HP Systems rack. Follow the steps beginning in the section "Installing the HP NetServer" in Chapter 8 to complete the installation.

A Specifications

The specifications listed below vary if you install a mass storage device in your server that has more stringent environmental limits. Make sure that the operating environment for your server is suitable for all the mass storage devices that you are using.

Environment

Thermal

Operating	5° to 35° C (41° to 95° F)
Non-operating	-40° to +65° C (-40° to +149° F)

Humidity

Operating	20% to 80% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Altitude

Operating	-30 to 3,045 m (~ 10,000 ft)
Non-operating	-30 to 12,180 m (~ 40,000 ft)

Acoustic Emissions

Sound level (LpA): 58<dBA

Size

Minimum Clearance

	HP NetServer LH 3000r	HP NetServer LH 3000
Front	1 m (39 inches)	1 m (39 inches)
Sides	2.5 cm (1 inch)	2.5 cm (1 inch)
Top	2.5 cm (1 inch)	2.5 cm (1 inch)
Back	15 cm (6 inches)	15 cm (6 inches)

Weight and Dimensions

NOTE	Use one person for every 40 pounds of NetServer weight when lifting it.
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	LH 3000r	LH 3000
Height	354.7 mm (14 in)	494.8 mm (19.5 in)
Width	482.6 mm (19 in)	350.5 mm (13.8 in)
Depth	749.2 mm (29.5 in)	724.2 mm (28.5 in)
Weight Empty	35 - 50 kg (77 - 110 lbs.)	35 - 50 kg (77 - 110 lbs.)

Power Requirements

Power Supply Specifications:

Power supply type	Auto-Ranging
Input voltages:	
Nominal:	100 to 127 VAC ~ 8.3 A at 50Hz 200 to 240 VAC ~ 3.9 A at 60 Hz
Range:	90 to 132 VAC at 47 - 63 Hz 180 to 264 VAC at 47 - 63 Hz
Power availability:	550 W continuous

HP NetServer LH 3000/3000r Input Power Ratings

Voltage (VAC)	Current (A)rms	Volt-Amps (VA)	Watts (W)
100	8.3	833	825
120	6.8	815	806
208	3.8	792	777
230/240	3.4	790	774

Video

The video memory used for the HP LH 3000 or HP LH 3000r NetServer is a 16Mbit (2MB) SGRAM, with architecture of 256K x 32 bit x 2 banks.

2D Video Modes

The LH 3000 supports these 2D video configurations:

Resolution	256 Colors	65K Colors	16.7M Colors
640 x 480	200Hz	200Hz	200Hz
800 x 600	200Hz	200Hz	160Hz
1024 x 768	150Hz	150Hz	not supported
1152 x 864	120Hz	120Hz	not supported
1280 x 1024	100Hz	100Hz	not supported
1600 x 1200	76Hz	76Hz	not supported

3D Video Modes

At 2 MB of SGRAM, the LH 3000 supports these video resolution configurations.

Resolution	Color Depths
512 x 384	16 bits
640 x 480	16 bits

NOTE The 16 bits of color is equivalent to 65K color.

B Regulatory Information

Regulatory Notices - Electromagnetic Compliance

Electromagnetic Compatibility (EMC) requirements have been established in many countries to regulate the radio frequency energy generated by Information Technology Equipment (ITE). This energy is generated during the normal and intended use of this equipment and so it is limited by country regulations to levels intended to minimize potential interference to other electrical equipment, including public safety services.

Two levels of radio frequency energy are allowed according to the type or use of equipment. Class A levels have been established for use in commercial or business environments. Class B levels are lower than the class A requirement and have been established for use in residential environments. Class B levels are also suitable when the environment includes electrically sensitive equipment.

The NetServer equipment you have purchased has been provided with a compliance label to indicate where it may be used with reasonable protection to the environment in which it is used. Additional statements are provided below as required by the requirements of international and domestic regulations.

NOTE	Check the label on your product to determine the level of operation.
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Notice for United States

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC (Federal Communications Commission) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment. Cables used with this device must be properly shielded to comply with the requirements of the FCC.

Class A Equipment

This equipment has been tested and found to comply with the limits for Class A digital devices, pursuant to Part 15 of the FCC (Federal Communications Commission) Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at their own expense.

Class A Accessories

Installation and use of a Class A accessory creates a system that meets the requirements for industrial and commercial environments. If you are installing a class A accessory in a system that has been labeled as a class B product, the requirements and notice for class A equipment shall be applied.

Notice for Canada (Industry Canada)

This digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice for Japan

The configuration of the NetServer you have purchased may be in either the class A or class B category.

For products labeled as Class B:

This equipment is in the Class B category information technology equipment based on the rules of Voluntary Control Council For Interference by Information Technology Equipment (VCCI). Although aimed for residential area operation, radio interference may be caused when used near a radio or TV receiver.

Read the instructions for correct operation.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。
取り扱い説明書に従って正しい取り扱いをして下さい。

For products labeled as Class A:

This equipment is in the Class A category information technology equipment based on the rules of Voluntary Control Council for Interference by Information Technology Equipment (VCCI). When used in a residential area, radio interference may be caused. In this case, user may be required to take appropriate corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Notice for Korea

The configuration of the NetServer you have purchased may be in either the class A or class B category.

Class A Equipment:

Please note that this equipment has been approved for business purposes with regards to electromagnetic interference, if purchased in error for use in residential area, you may wish to exchange the equipment where you purchased it.

Class B Equipment:

Please note that this equipment has been approved for non-business purposes with regards to electromagnetic interference. This equipment can be allowed for use in all areas as well as residential areas.

A급 기기 :

이 기기는 업무용으로 전자파 장애검정을 받은 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

B급 기기 :

이 기기는 비업무용으로 전자파 장애검정을 받은 기기서 주거지역은 물론 모든 지역에서 사용할 수 있습니다.

Notice for Taiwan

Class A Warning Statement

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Notice for European Union


For Class A Products

WARNING	Class A Products: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
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Radio Frequency Emissions Warning for Accessories

This product has been found to comply with CISPR 22 Class B EMC emission limits. Installation and use of a Class A accessory creates a system that meets the requirements for industrial and commercial environments. However, in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Declaration of Conformity (US, EU, Australia)

DECLARATION OF CONFORMITY According to ISO/IEC Guide 22 and EN 45014	
Manufacturer's/Supplier Name:	Hewlett-Packard Company
Manufacturer's/Supplier Address:	10955 Tantau Avenue Cupertino, CA 95015 USA
Declares, that the product	
Product Name:	Network Server
Model Number(s):	HP NetServer LH 3000/LH 3000r
Product Options:	ALL
Conforms to the following Product Specifications:	
Safety:	IEC 950: 1991+A1, A2, A3, A4 / EN 60950: 1992+A1, A2, A3
EMC:	CISPR 22:1993 / EN 55022:1994 EN 50081-1:1992 - Generic Emission EN 50082-1:1992 - Generic Immunity IEC 801-2:1991, 4 kV CD, 8 kV AD IEC 801-3:1984, 3 V/m IEC 801-4:1988, 0.5 kV Signal Lines, 1 kV Power Lines FCC Title 47 CFR, Part 15
Supplementary Information:	
1) The product was tested in a typical configuration with Hewlett-Packard peripherals. 2) Models were configured with a network interface board and shielded twisted-pair data cable. 3) The product complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: <ul style="list-style-type: none"> • This device may not cause harmful interference, and • This device must accept any interference received, including interference that may cause undesired operation. 	
The product herewith complies with the requirements of the following directives and carries the CE marking accordingly: <ul style="list-style-type: none"> - EMC Directive 89/336/EEC including CE Marking Directive 93/68/EEC - Low Voltage Directive 73/23/EEC 	
	
Cupertino, November 8, 1999	Regulatory Engineering Manager
North American Contact: Hewlett-Packard Company Product Regulations Manager 3000 Hanover Street, Palo Alto, CA 94304 Phone: 415-857-1501 European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ / Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX: + 49-7031	

Regulatory Notices - Product Safety

The following information applies only to servers with factory-installed components.

CD-ROM and Laser Safety Statements

The following information applies only to servers with factory-installed drives.

CD-ROM Electrical Safety Statement – United States

WARNING	To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.
----------------	--

Laser Safety Statements – United States

CAUTION	This CD-ROM mass storage system contains a laser system and is classified as a "Class-1 Laser Product" under a U.S. Department of Health and Human Services (DHHS) Radiation Performance standard according to the Radiation Control for Health and Safety Act of 1968. To ensure proper use of this product, please read this instruction manual carefully and retain for future reference. Should the unit ever require maintenance, contact an authorized service location.
----------------	---

CAUTION	Use of controls, adjustments or the performance procedures other than those specified herein may result in hazardous radiation exposure. To prevent direct exposure to laser beam, do not try to open the enclosure.
----------------	--

LASER Safety - Finland

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP NetServer LH 3000r/LH 3000 - verkkopalvelimeen voidaan asentaa lisävarusteena laitteensisäinen CD-ROM-lukulaite, joka on laserlaite.

Kyseinen CD-ROM-lukulaite on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalisessa käytössä lukulaitteen suojakotelo estää laseräteen pääsyn laitteen ulkopuolelle. Laitteen turvallisuusluokka on määritetty standardin EN 60825 (1991) mukaisesti.

Laser Safety - Germany**VORSICHT**

Diese Gerät enthält ein Laser-System und ist als "LASER PRODUKT DER KLASSE 1" klassifiziert. Für den richtigen Gebrauch dieses Modells die Bedienungsanleitung sorgfältig durchlesen und als Referenz aufbewahren. Falls Probleme mit diesem Modell auftreten, die nächste "authorisierte Services-Verrtetung" benachrichtigen. Um einen direkten Kontakt mit dem Laserstrahl zu vermeiden, soll das Gehäuse nicht geöffnet werden.

VORSICHT

Die Verwendung von anderen Steuerungen oder Einstellungen oder das Durchführen von anderen Vorgängen als in der Bedienungsanleitung beschrieben kann gefährliche Strahlenexpositionen zur Folge haben.

**CLASS 1
LASER
PRODUCT**

This CD-ROM Drive Unit is classified as a CLASS 1 LASER PRODUCT.

**LASSER
KLASSE 1
PRODUKT**

The CLASS 1 LASER PRODUCT label is located on the top of the drive.

Bei diesem CD-ROM-Laufwerk CDU56S handelt es sich um ein Laser-Produkt der Klasse 1. Ein entsprechender Aufkleber mit der Beschriftung LASER KLASSE 1 PRODUKT befindet sich der Obersieite des Geräts.

Battery Statements

This product uses a lithium battery.

Battery Statements – United States

WARNING

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Battery Statements – France

AVERTISSEMENT Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Noise and Ergonomic Safety Statements

Noise Declaration and Ergonomics - Germany

Sound Pressure: $L_{pA} < 58 \text{ dB (A)}$

am Arbeitsplatz, Beobachter Position (workplace, bystander position)

normaler Betrieb (normal operation)

nach DIN 45635 T. 19 (per ISO 7779)

This product has not been evaluated for compliance with the ZH1/618/ISO 9241 ergonomic requirements.

C Service and Support

For all Service and Support information, see the *HP NetServer Warranty and Service/Support Booklet* included with your product.

D Warranty and Software License

Warranty

See the *HP NetServer Warranty and Service/Support Booklet* included with your product for all warranty and service/support information.

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